

COAL AGE

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C. E. LESHER, Editor

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Standardization an Absurdity

WHATEVER may have been in the minds of Messrs. Borah, Winslow et al. when they framed the act creating the United States Coal Commission and called for reports on standardization of prices, margins, wages, the work to be performed, the mines, the cost of living and about everything else, the idea has been pretty well knocked thus early in the game. In turn the bituminous-coal operators, the miners, the anthracite producers and now the retail dealers have shown the absurdity of the undertaking. It has been remarked, for instance, that the first step in standardizing the cost of living is the standardization of wives, and some such impossible foundation must underlie attempts in the other direction directed by the act.

A standardized price, whether for coal or for labor, if it means anything, means a uniform price. A uniform price, to be not confiscatory, must be high enough to permit the marginal producer—the high-cost fellow—to live and profit. Thus the standardized mine prices established by the Fuel Administration (according to the law creating that organization) were uniform by districts and, in order to be high enough to permit the operation of a majority of the tonnage, allowed abnormally high margins for the lowest-cost producers. Under normal conditions of competitive marketing the low-cost operator is prepared to make a lower price and does when the market requires that policy.

The country wants no subsidized, standardized industry and any attempt to set by edict the cost of living and the wage of the worker or the margin, cost, price, and profit of the producer will produce that result.

Threshing Out the Assigned-Car Question

ASSIGNED cars and the related "private" cars have for many years caused dissension between the carriers and the commercial coal operators. There has just been concluded the second set of hearings before the Interstate Commerce Commission on this question with the final round to come in January. The matter is getting the best threshing out it has ever had. For months both the railroads and the coal operators have been preparing for these hearings and the testimony and exhibits introduced have been voluminous. Every opportunity has been given to interested parties to present their views. The commission has given every indication of seeking a solution of the problem.

In a report to the Senate, dated June 11, 1920, the Interstate Commerce Commission said that prior to 1907 it was a common practice for railroads to deliver to coal mines cars privately owned or leased for the carriers' own fuel loading and to refrain from counting such cars in the current distribution. By its decision in the "Hocking Valley" and "Traer" cases in 1907 and 1908 the commission modified this practice, insisting that such cars be counted unless the mine shipped

no commercial coal—that is, unless the arrangement with the railroad was for the entire output of the mine. This continued to be the rule until 1918, when the Fuel Administration prevailed upon the Railroad Administration to abandon all assigned cars for railroad fuel coal and instead to put the procurement of fuel in the hands of the former. From the first half of 1918 until April 16, 1920, there were no assigned cars for railroad fuel.

The reinstatement of this method of assisting the railroads to obtain fuel coal was, according to the commission, necessitated by emergency conditions—insufficient supply of cars available for the transportation of coal. At that time the commission recommended "that until experience and careful study demonstrate that other rules will be more effective and beneficial," this practice be continued. The hearings now under way purpose to find the facts and determine whether such rules can be formulated.

Reduced to simplest terms the assigned-car question becomes a matter of price. Railroads in general in the past have enjoyed a lower price for their coal than that charged other consumers. Their argument as to why this should be so was summarized by the Railroad Administration in the early part of 1918 as follows: (a) The demand is permanent; (b) the superior credit of the carriers; (c) minimum sales expense; (d) the railroads store a considerable portion of their requirements; (e) the railroads quite generally own coal lands and could mine their own coal; (f) the commercial fact that all these conditions have been recognized and have had their bearing in securing the uniformly lower price of coal which the railroads have always enjoyed.

Assigned cars are a factor in bargaining for coal. An output contract with preferred car supply that assures continuous full operation is offered as the inducement for low price. The buyer agrees to take all the coal the mine can produce and this arrangement permits operation under the most favorable conditions and with costs lower than if the same mine were to have intermittent operation. When cars are plentiful the demand for coal is dull and there is no necessity for, or advantage in, preferred car supply. But if and when the demand for coal increases to the point where more cars are required for its transportation than the railroads are able to supply and a car shortage results, then the assigned car becomes a factor. The mine that has this arrangement with the railroad works full time, and other mines on the same road, often adjacent thereto, because of lack of cars, are able to work, as now, but one or two days per week.

Therein lies the cause of complaint and the basis for argument. Just so far as cars for assignment to certain mines are removed from the total available for distribution to all other mines, that much will the cars for loading, and thereby the coal for sale, be decreased at these other mines. Estimates of the percentage by which operating time would be increased by the elimi-

nation of assigned cars and the complete and perfect distribution of cars range upward from 3. The figure would vary with the field and be affected by local conditions. In some, if not many, areas where the practice is general the benefit to the commercial producer would be substantial. Even those operators who now or in the past have taken railroad fuel contracts with assigned cars are opposing the practice because of the inequalities it introduces.

Not all railroads use assigned cars for the protection of fuel supply. A number of important systems and many small roads have not found it necessary to resort to this practice. Perhaps the real point to be determined is why all roads cannot abandon the practice. If it be true that some roads cannot get coal sufficient for their operation unless they resort to preferred car supply, how is it that others can and do? An imposing array of railroad presidents appeared before the commission in this hearing and testified not only with respect to the reasonableness of assigned cars but their necessity if the roads are not to be required to pay more for coal, which, by inference, is to say if the roads are not to come before the commission with a request for higher rates to pay for the coal. The public may ask as well whether it is being called on to pay more for coal as a result of the railroads' getting it cheaper.

Wage Making and the Sherman Law

NEARLY two years ago indictments were brought before Judge Anderson in the federal court at Indianapolis against more than two hundred coal operators and miners charging, among other things, conspiracy in violation of the Sherman law in making various wage agreements and contracts. These indictments were obtained under a former administration by a former Attorney General. They have only served so far to raise a doubt as to the legality of interstate negotiations between operators and miners.

When the point was raised early this year the present Attorney General is reported to have scoffed at the idea that those indictments presented any obstacle to the operators meeting with the miners. He later took a trip to Indianapolis and talked with Judge Anderson. He had nothing further to say. We have not been informed whether he concluded that the government had such a poor case that it were best left to perish in oblivion or whether some deeper reason prevails for not quashing it or bringing it to trial.

There certainly can be no wage agreement between the bituminous coal operators and the United Mine Workers to take the place of the contract that expires next April unless they negotiate one. The surest way to avoid a strike next year is to have a peaceful settlement prior to that time. The union appears willing to negotiate on any basis save separate districts. Any other involves interstate relations, to all intents of the sort that has been put under the ban by the action of Judge Anderson's court.

No one save the operators indicted—the United Mine Workers appear to hold the matter lightly—is privileged to judge the seriousness of their predicament. If the Illinois or the Pittsburgh or any other operators say that they are not free to negotiate with operators from other states respecting the wages to be paid to the miners of a common union because they are liable to be held to be acting in transgression of the law, who is to say they are not speaking in good faith?

There is but one answer. Let the administration quash the indictments—if not in full, at least in so far as they relate to interstate wage negotiations. Getting government sanction for the method to be adopted in future negotiations is a legitimate enterprise. Certainly the mine owners of this country have been harassed long enough by the uncertainty which has enveloped them ever since the Indianapolis indictments were returned.

If sufficient evidence to justify prosecution on the conspiracy charge has been obtained, then let the case proceed with dispatch and may the arm of the law descend mightily upon the guilty. If it has not, then in the interest of the public good the indictments should be lifted so that they may not interfere with a proper administration of the coal industry's affairs.

The Future of Anthracite

WITH production of anthracite setting new high weekly records, with every man working at top speed and taking in record earnings, this appears to be an inappropriate time to talk about anthracite as an intermittent industry. Such it has been this year, however, because of the five months' strike. Even with production at 2,000,000 net tons per week the country will have but 60 per cent of its requirements of hard coal this winter. Consumers, whether they wish it or not, will this winter learn the values of substitute fuels. Bituminous coal, coke, gas, oil, each is having its innings in homes, apartment houses, hotels and theaters where never before had any fuel save anthracite been used.

Let us assume that next year the hard-coal miners obtain a renewal of their present wage scale, if nothing better, and the selling prices of the coal they produce remains as high as now, if not higher. Many of those whose experience with substitutes is not unfortunate this winter will hold on to those substitutes. The demand for hard coal will be decreased, particularly for the sizes now most in demand—stove, nut and range. With decreased demand the business of mining will cease to be a full-time occupation. The miners will then demand higher daily and tonnage rates of pay to compensate for short time and the cost and the price will further ascend. The country may thus become accustomed to using some fuel other than hard coal before the limited deposits are exhausted. Coal this country must have, but it may find that it can get along with mighty little anthracite.

Operators show more concern over this than the miners, because they have a fixed heavy investment whereas the miners may more readily pull up stakes and depart for other jobs. It will be a sorry day for the hard-coal industry when the only hope of full-time operation lies in having a strike to reduce supplies and make the consumer coal hungry.

WHILE THE UNITED STATES cannot hope to compete with the low-cost countries in the manufacture of the simpler forms of machinery which are not made on a large scale, there is increasing evidence that this country can compete in any market with machinery which is made in large quantities and with such articles as machine tools, typewriters and locomotives, which are developments of American ingenuity.

WHAT INTERESTS THE CONSUMER is not the number of square miles that contain coal but the number of square people that sell coal.—*Indianapolis Star*.



Pumping the Big Muddy River Out of a Mine to Save Machinery and 300,000 Tons of Coal

Roof Caves Under Flood Extension of River and Water Pours Into a Mine at Murphysboro, Ill.—Big Pumps and Water Hoist Work Months Ejecting Five Million Gallons a Day—Mine Is Saved

BY C. L. MOORMAN*
St. Louis, Mo.

IN THE latter part of the year 1920 the Consolidated Coal Co. of St. Louis acquired the operating coal mines in Illinois of the Big Muddy Coal & Iron Co., including mine No. 9, situated at Murphysboro, which had long borne an enviable reputation for the quality of its product. Coal seam No. 2 is extracted at this mine, a characteristic section of the coal and overburden showing a 6-ft. seam of coal, overlaid with 1 to 3 in. of draw slate under a gray-slate top. Under the coal bed lies 1 in. of fireclay on sand rock. Room-and-pillar methods of mining, in which 6 in. of coal was left under the slate roof, had been followed under the former ownership and were continued by the purchasing company.

The area to be mined from this shaft is traversed on the north and west by the channel of the Big Muddy River, a stream which not only has an unusually flat drainage slope, in this territory averaging only about 5 in. to the mile, but one which is subject to wide and frequent variations in water level. On account of its proximity to the Mississippi River, the Big Muddy at this point is affected by fluctuations in the level of the larger stream.

In the development of this mine, in order that a large body of coal might be entered lying between the river and abandoned mine workings, two main entries had been driven under and across the river bed, one to the north, the other westerly. Gathering was done by mules; three electric locomotives were used for main haulage and the coal was undercut by ten electric min-

ing machines. Twelve electrically driven pumps and three steam pumps were used to eject water from underground, the mine making normally about one million gallons each twenty-four hours. The depth of the hoisting shaft is 115 ft. from the ground surface to the rail at the caging point.

The surrounding surface is rolling prairie with sharp breaks where side streams join the river, much of it considerably lower than at the shaft. The coal seam

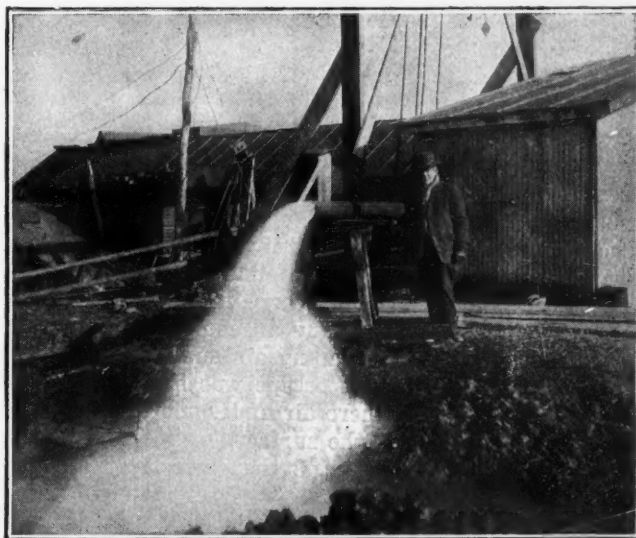


FIG. 1—PUMPING 1,400 GALLONS PER MINUTE FROM AIRSHAFT

This powerful 6-in. stream was thrown 24 hours a day by an electric centrifugal pump mounted on a platform in the airshaft just above water level. About two million gallons per day were ejected in this way.

*Chief engineer, the Consolidated Coal Co. of St. Louis.

The headpiece shows a lake almost an acre in surface extent formed when the water broke into No. 9 mine of the Big Muddy Coal & Iron Co. The photograph from which this illustration was made was taken after the river receded. The hole, reaching 50 ft. down into the mine workings, is at the far end of this pool.

underneath also presents many variations from a horizontal plane. The shallow cover over the coal bed is easily penetrated and many holes for pump columns have been drilled, so that underground pumps may be advantageously placed without resort to long pipe lines.

For many years the men employed at this mine have suspended work when the stage of water in the river reached a certain mark, resuming operations when the water had receded. The objection to working under flood water appears to have been based upon the fact that bad roof had been encountered years ago in some of the most extended workings, and not because of any actual unusual seepage of water into the mine. As a rule the Big Muddy rises above the specified mark several times during each year, and such rises occur at any time—there is nothing regular in the flood periods of the Big Muddy.

On Nov. 18 last year the water had reached the point regarded as the limit for safe operation, and work was suspended. One week later the stage of river was 15 ft. above the mark, this being the highest point reached during that particular flood. Five days later the river had fallen 5 ft., but back water still filled all the side streams. Suddenly on this date, at about 3 o'clock in the morning, the river flowed into the mine. The underground commotion and uproar was audible to two men who were at the shaft bottom completing a night inspection tour and who were in the act of belling away the cage for the top.

They were hoisted safely, but within two hours after the break the water rose inside the hoisting shaft to the same level as that of the water in the river, this being 23 ft. below the ground landing. As the river continued to recede to its customary channel a systematic search for evidence on the surface of the ground of the connection between the river and the mine was begun two days later. When found this exhibited itself as a small "lake" about one acre in extent, with fallen trees around the margin and an ebullient surface near the south end, where escaping air bubbled up from the mine. The force of this escape was shown by several geysers in the river where air under enormous pressure had broken through to the surface.

On the morning of Dec. 3 the river had fallen to a plane below the outlet of a small creek along the bed of which the "lake" formation appeared, thus forming a barrier between "lake" and river. The water remaining in the "lake" quickly disappeared into the mine, and opportunity was afforded to examine the position and extent of the damage.

The break in the roof occurred at the extreme edge

of long-abandoned work at the northeast corner of the mine, about 400 ft. from the normal water's edge of the Big Muddy. At this point about 40 ft. of earth rested on top of the slate. The terrific inrush of water from the river channel undermined the sides of the creek, carrying the earth into the mine until a chasm about 120 ft. wide and 350 ft. long was produced. Approximately 25,000 cu.yd. of earth disappeared into the underground, together with the small trees and brush with which the acre of territory was covered. The larger trees on each side of the creek fell into and across the depression as the sides assumed verticality from the force and cutting action of the rushing water.

Fearing that another rise in the river again would fill the surface sink with water a hurried attempt was made to block with layers of brush and timber mattresses and earth the opening in the slate roof, which appeared as a ragged roughly rectangular hole measuring about 10 x 12 ft. Sub-

sequently the underground passages leading from the hole in the roof were solidly blocked with timbers, earth and hay. The lake has been full of water for months now, and no perceptible leakage has occurred.

With the cessation of inflow from the river the water level in the hoisting shaft began falling until on Dec 9 it had reached a depth of 86 ft. below the ground landing, a fall of 63 ft. from its highest point. This disappearance of the water from the "lake," being concurrent with the lowering of the level of the water in the shaft, indicated that the stoppings were giving away under pressure and that the old mined-out sections were being flooded. As it was impossible to determine with any semblance of accuracy how many or how few of the underground chambers had been filled with water it was assumed that the mine was entirely flooded, and in that event it

THEY SAID IT COULDN'T BE DONE

When the news went around that the Big Muddy River in southern Illinois had broken through into the No. 9 mine of the Consolidated Coal Co. of St. Louis and had filled it almost to the shaft top, engineers said the mine was a goner. When W. J. Jenkins, general manager, and C. L. Moorman, chief engineer, began pumping and hoisting water, the engineering fraternity smiled and said they admitted the nerve of these men, but who could save an old mine with an immense cavern torn from the surface clear down into the workings? And anyway it wouldn't be worth the tremendous cost.

But these two men had pumped water before. The mine normally makes a million gallons a day. They were staggered but not whipped when they figured that two and a half billion gallons of flood plus the regular million daily gallons would have to be ejected. The cost might be \$75,000. But down in the mine were 300,000 tons of good Murphysboro coal and machinery and trackage worth at least \$50,000. So they went after it, working their three pumping shifts 24 hours a day for months. They found the job less than they had figured. And they won.

The 300,000 tons of coal is now coming out of the shaft at the rate of 1,000 tons a day. The motors and other "drowned" machinery, still worth \$20,000, have been rebuilt and are in use, and the chasm yawning from the surface down to the coal is so successfully plugged at the bottom with timbers and mattresses of brush, baled hay and dirt that there is not even a sizable seepage, although summer floods have filled this great crater and it stands as a vast, threatening tank directly over the works. The whole cost of the dewatering was something less than \$25,000.—EDITOR.

would be necessary to pump out about two and a half billion gallons of water (in addition to the normal leakage of one million gallons per day), a rough estimate subsequently proved to be far too large.

To raise this immense volume of water, unusual methods were necessary. Two stout wooden boxes were constructed 7 ft. 4 in. long, 4 ft. 7 in. wide and 3 ft. deep, with hinged horizontal flap valves on their bottoms for the entrance of water and with hinged end gates opening inwardly and operated by double crank mechanisms. The cages were dismantled, and the water boxes hung in the regular cage side irons. Water was hoisted continuously until the bottom landing was clear, so that the mine could be entered from the hoisting shaft. The filling and the discharge of the water boxes was automatic, and an average speed of three hoists per

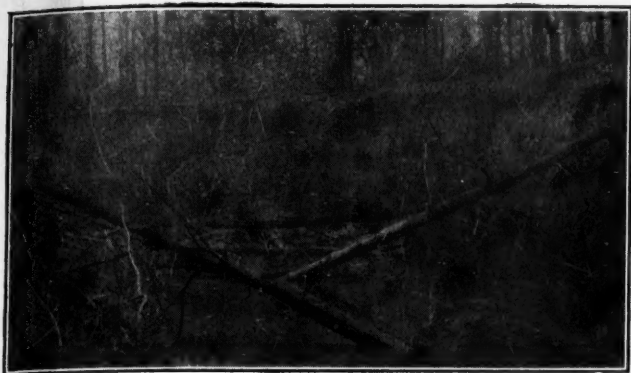


FIG. 2—FULL-GROWN TREES FELL INTO THE CRATER

As much as 25,000 cu.yd. of earth disappeared into the mine. When this hole had been emptied of water down to the level of the coal a puncture 10 ft. in diameter was revealed extending through the 8 ft. roof of slate. This was stopped with logs, mattresses of brush, baled hay and a vast quantity of dirt. Floods since then have filled the hole but no water has leaked into the workings.

minute was maintained. One engineer ordinarily made four per minute. Some water slopped over the sides of these hoist boxes and leaked out, so that the average quantity brought by this method to the discharge point was 700 gallons per hoist, or 2,100 gallons per minute.

Soon after this installation began work an electrically operated centrifugal pump was placed on a platform just above the water surface in the airshaft. This pump discharged 1,400 gallons per minute to the surface. Working twenty-four hours, about five million gallons per day was now being discharged.

Nine days after the flooding of the mine, pumping operations were begun, continuing from Dec. 9 to Feb. 7 uninterruptedly, except for minor delays. On the latter date the water level had been lowered to the underground landing and the hoisting of water was discontinued. A record of changes in the water level, gaged in the shaft at the same hour each day, is appended (Fig. 6).

When it is remembered that practically the same quantity of water was being ejected daily, the wide fluctuations in surface level indicate that the flow of water to the mine bottom was often obstructed. On four widely separated dates—Dec. 13, Jan. 8, Jan. 26 and Feb. 5—the water level remained stationary. On Dec. 19, Jan. 16, Jan. 30 and Feb. 1 it reached a higher level than that recorded on the preceding day, the largest increase being on Feb. 1, when the water rose more than 2½ ft. in spite of pumping.

As soon as the shaft bottom was clear of water the three steam pumps near the shaft were reclaimed and put in operation, a second centrifugal pump of 1,200 gallons per minute capacity was installed inside the mine, followed by a third centrifugal of 700 gallons per minute capacity and a fourth of 1,200 gallons per minute capacity, so that for several days, or as long as a large volume of water was

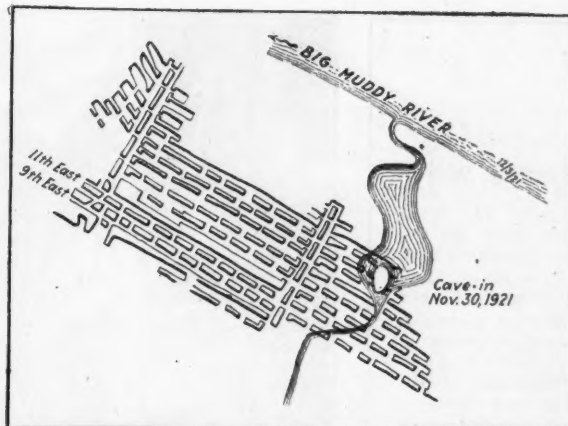


FIG. 3—MINE WORKINGS AROUND THE CAVE-IN

The break occurred under the bed of a little creek which crossed the northeast corner of the mine above some abandoned workings. The swirl of water going down the hole excavated the lake shown in the creek bed.

accessible, the maximum ejection of 7,000,000 gallons per day, or more than 29,000 tons, was attained.

As the recession of the water level continued, and as high points along the haulageways emerged, a number of disconnected pools were formed and further dewatering became merely a problem of moving pumps from place to place to keep in contact with the receding water, minimizing the length of discharge lines by

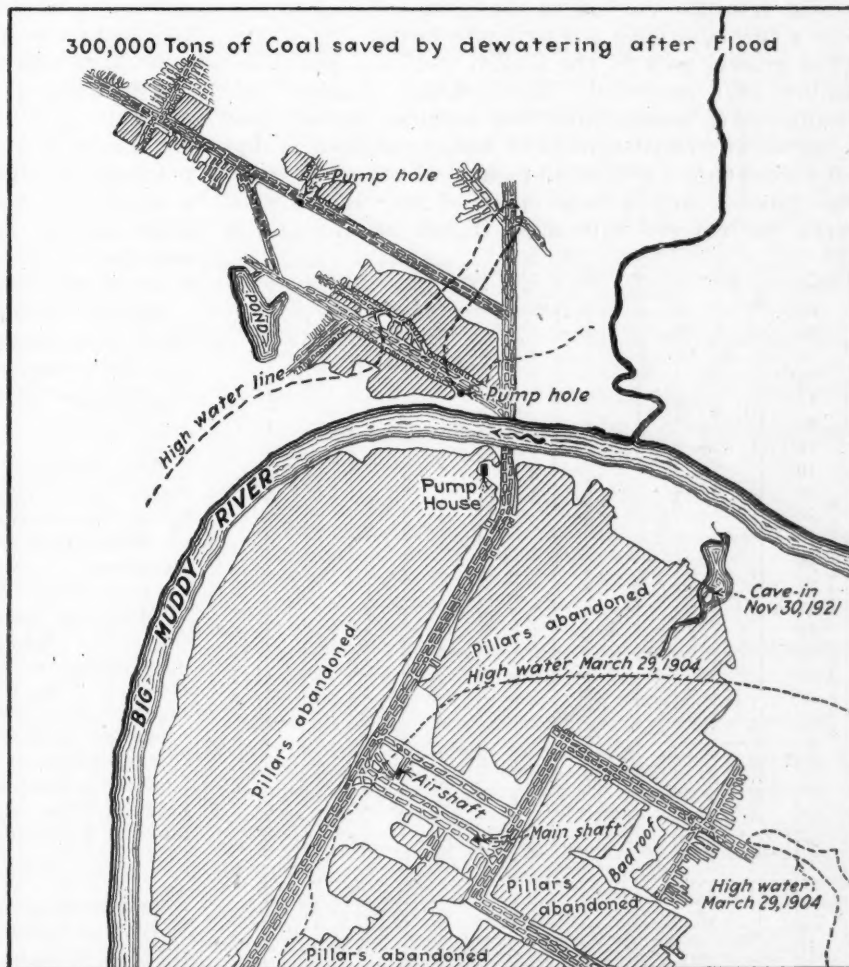


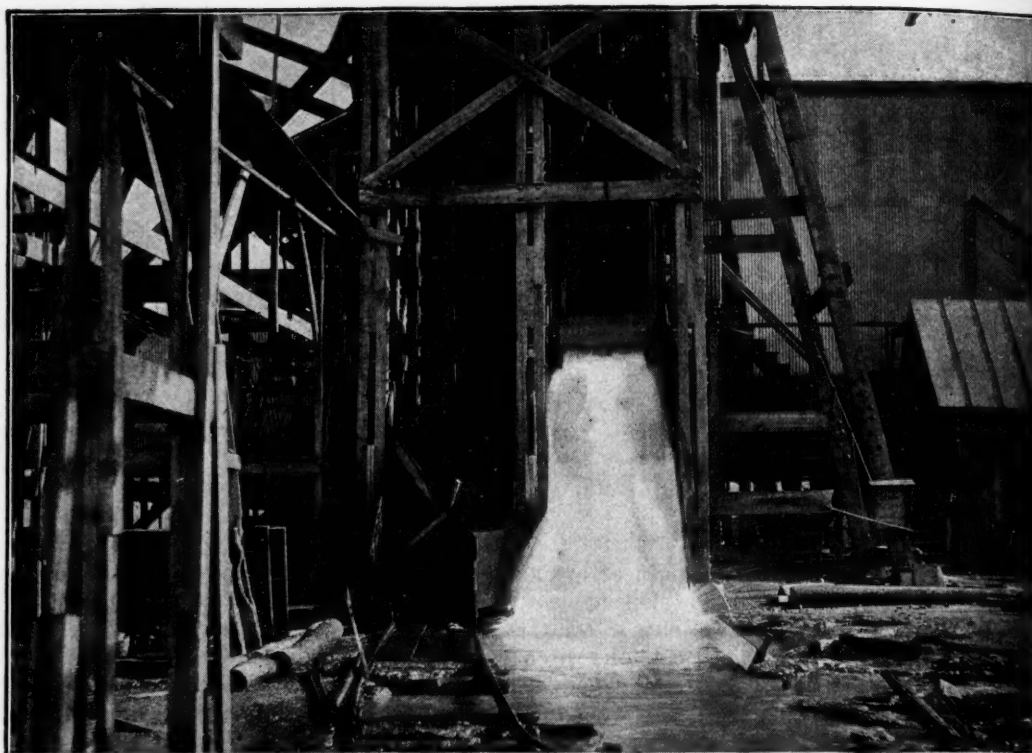
FIG. 4—MAP SHOWING LESS THAN ONE-THIRD OF THE MINE

This shows the position of the mine with respect to the slow-flowing Big Muddy, whose floods every year cover much of the surface above the mines. The break during the high water of November, 1921, into the vast expanse of new and old workings, occurred in the bed of a tiny stream near the northeast corner of the property. By the herculean accomplishment of dewatering this mine 300,000 tons of good coal was reclaimed and equipment worth \$50,000 or more was saved.

FIG. 5

Hoisting Water

A pair of boxes was hung in the cage irons, each with a bottom flap valve and a hinged end gate which opened inwardly by a double - crank mechanism. Each held 700 gallons. For two months these boxes were in operation practically 24 hours a day, making an average of three hoists per minute and discharging three million gallons daily.



drilling from the surface in the most economical positions a few additional pump-column holes.

The greater part of the flooded electrical machinery has now been recovered. Three of the reclaimed electrically driven pumps have been repaired and are now in operation. Isolated pools of water remained in dips and were removed with small pumps, which was a rather slow process, and a large part of the underground tracks was covered with mud, though of this and of

débris it would seem that only a remarkably small quantity had to be removed in view of what a large body must have entered with the water.

Practically all the former live workings of the mine are now open and dewatering is essentially completed for that part of the mine in which future operation is planned. A few small slate falls to be cleaned up and a number of broken stoppings to be rebuilt represented about all the damage the mine itself suffered. The engulfed motors and some of the other equipment had to be rebuilt, however.

During the nearly seven months of pumping about one billion gallons of water was removed, and the quantity remaining in abandoned workings does not threaten or endanger any part of the live workings.

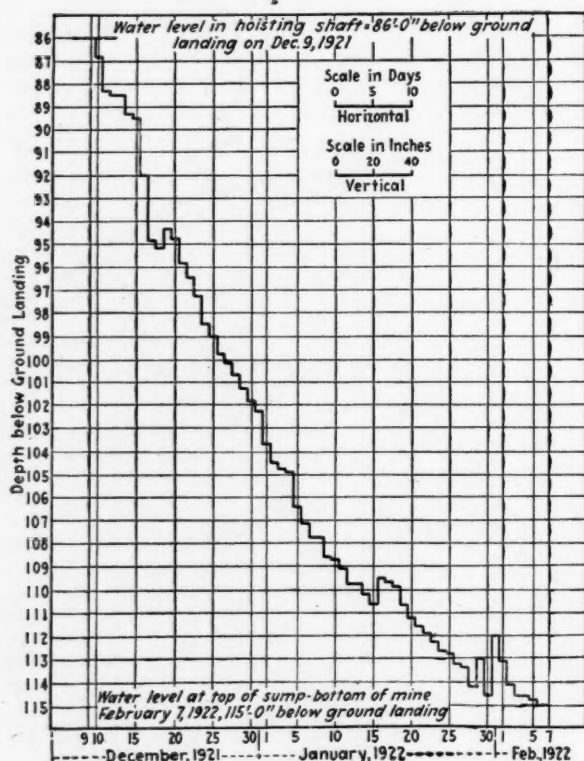


FIG. 6.—CHART SHOWING SPEED OF PUMPING

With five million gallons ejected each 24 hours by the combined efforts of a pump and the main-shaft hoist, the water level in the shaft dropped steadily except on four days when stoppings in the outer workings broke, letting volumes of water pour in.

THE VERTICAL CARBONIZING OVEN constructed at Grand Forks, N. D., in the course of a co-operative investigation by the University of North Dakota and the U. S. Bureau of Mines looking toward the commercial utilization of the northwestern lignites, has recently been operated under the supervision of W. W. Odell, fuel engineer of the Bureau of Mines, in the manufacture of lignite char on a commercial scale. Results were quite satisfactory and valuable information on the production of lignite char without the recovery of byproducts was obtained. The cost of producing this char was reduced considerably below the cost of operation in the carbonizing oven used in 1921. A satisfactory grade of char was produced. Grates for the utilization of this char in the ordinary magazine-feed house-heating stove and for a house-heating boiler have been made at Pittsburgh and sent to North Dakota for distribution to domestic consumers.

THE METHOD OF COLLECTING mine samples of coal by the Bureau of Mines involves selecting a representative face of the bed to be sampled; cleaning the face; making a cut across it from roof to floor, and rejecting or including impurities in this cut according to a definite plan as they are included or excluded in mining operations; reducing this gross sample, by crushing and quartering, to about 3 lb.; and immediately sealing the 3-lb. sample in an airtight container for shipment to the laboratory.

Comparison of Froth with the Trent Process*

Flotation About as Effective as Trent Process on 65-Mesh Coal of Pacific Northwest—Latter Method Does Better Work on Slimes—Amalgam Water-Free and When Made with Fuel Oil Can Be Burned Economically

BY OLIVER C. RALSTON†

Washington, D. C.

FOR several years the Bureau of Mines experiment station at Seattle has been engaged in a study of washing the coals of the Pacific Northwest, and as one phase of this study the flotation of the fine sizes of coal on oil froths was made by one of the research fellows‡ of the College of Mines, University of Washington.

Simultaneously in 1920 the Trent Process Corporation was testing representative samples of coal from all portions of the United States and arranged for tests to be made in three places—one in Washington, D. C., at the laboratories of the U. S. Bureau of Standards; one in Pittsburgh, Pa., at the experiment station of the U. S. Bureau of Mines, and one at Berkeley, Cal., at the experiment station of the U. S. Bureau of Mines. The Northwest Experiment Station was requested to send representative samples of the Washington State coals to the three laboratories where the Trent process work was performed, and did so, quartering the samples and saving a sample itself on which to make froth flotation tests for purposes of comparison with the Trent work.

The Trent process work done by the U. S. Bureau of Mines at Pittsburgh has already been reported§ by Perrott and Kinney. Unfortunately, only the work done at Berkeley is directly comparable to the Seattle froth-flotation work, for the reason that the Seattle work was done on coal crushed to 65-mesh whereas the Trent work carried on in Washington and Pittsburgh was done on more finely ground coal, usually 200-mesh. At Berkeley the experimenter employed by the Trent Process Corporation, A. H. Heller, tried the Trent process on these 65-mesh samples of coal after grinding them to a series of different sizes. In this article only those Trent process tests will be reported which are directly comparable to the froth-flotation tests, the former being abstracted from Mr. Heller's report.

FROTH FLOTATION NOT SUITED TO SLIMES

It should be pointed out, in all justice to the Trent process, that it is not limited to the treatment of such coarse coal but seems to work very well on the finely divided slime. Therefore, this comparison is really made only on coal crushed to give reasonably satisfactory work by froth flotation, overlooking the fact that these may not be the best conditions for the Trent work. This will be seen on looking over the figures given in the following paper.

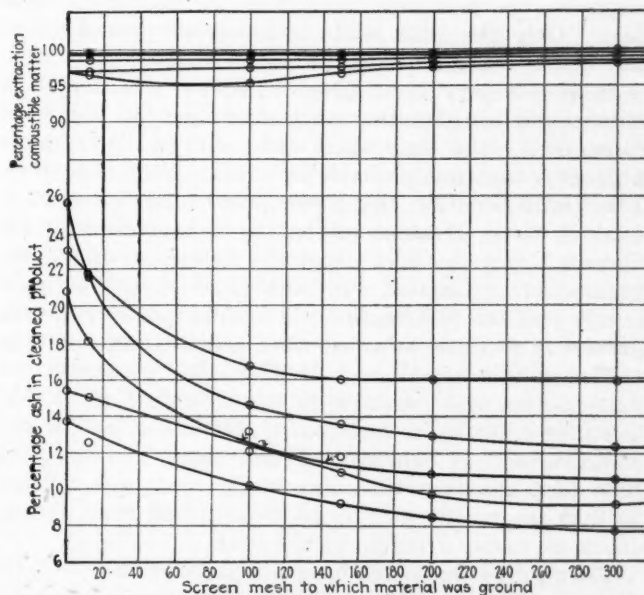
As is well known, froth flotation is one of the modern methods of separating finely divided materials. While the Trent process is even more modern in its development it greatly resembles some of the old "bulk-oil"

separation processes that preceded flotation. Oil amounting to from 30 to 50 per cent of the weight of the coal is added to a suspension of finely divided coal in water and stirred up with it.

The oil passes into or is absorbed by the coal or the carbonaceous matter, the ash remaining in the water. By a variation in the degree and duration of agitation of the pulp and the quality and quantity of the oil, the resultant "amalgam" of coal and oil can be made either to float or to sink. By prolonged agitation, the time varying with the materials used, the amalgam will collect into little spheres which are well formed and fairly strong so that they can be screened from the pulp or otherwise removed mechanically.

There is a more or less definite ratio of combination between the oil and the coal, and by using the bare minimum of oil the amalgam can be made quite hard. Any excess of oil makes the amalgam softer and more oily, whereas the hard amalgam frequently does not even feel oily. These little spheres of amalgam call to mind the old Cattermole granulation process which immediately preceded froth flotation. Where heavy, cheap oils are used they need not be separated from the coal. Hence the Trent "amalgam" may be used directly as fuel and consequently the "bulk-oil" concentration of coal is not subject to the limitations that were found when ore was thus concentrated, for in that case the large quantity of oil left in the ore concentrate made the process expensive.

The samples taken represented the whole range of



EXTRACTION INCREASES AND ASH DECREASES, THE FINER THE MATERIAL IS GROUND

Though froth flotation is used only on fine material it is not suited to those finer particles which in aggregate are known as slimes. This graph shows results from the Trent process of concentration and here in each of the five coals tested, fineness, purity and recovery run concurrently.

*Published by permission of the Director, U. S. Bureau of Mines.

†Assistant chief metallurgist, U. S. Bureau of Mines.

‡Wichmann, A. P., whose report was abstracted and discussed in a paper published in *Chemical & Metallurgical Engineering*, Vol. 26, pp. 500-503 (1922).

§*Chemical & Metallurgical Engineering*, Vol. 25, No. 5, Aug. 3, 1921, pp. 182-188.

coals between black lignite (low-grade sub-bituminous) and semi-anthracite and were characteristic of the Pacific Northwest coals in being boney or high in inherent ash. It had been hoped that fine grinding would liberate the ash, but it was found that even the very finest grinding attainable commercially (300-mesh) still left a high inherent ash in all the samples. These had been gathered by A. P. Wichmann, who held a graduate fellowship in the University of Washington and who also performed most of the flotation tests herein reported.

Sample No. 1 is a low-grade sub-bituminous coal from the Mendota Coal & Coke Co. property, Mendota, Wash. Sample No. 2 is a good sub-bituminous coal from the Issaquah mine of the Pacific Coast Coal Co. Sample No. 3 is a bituminous non-coking coal from the Carbon No. 10 seam of the Carbon Hill Coal Co., Carbonado, Wash. Sample No. 4 is a bituminous coking coal from the Wilkeson Coal & Coke Co. property, Wilkeson, Wash. Sample No. 5 is a semi-anthracite coal from the South No. 3 seam of the Carbon Hill Coal Co., Carbonado, Wash. The proximate analyses of these samples are given in Table I.

The flotation tests were made in a small "Minerals Separation" type of flotation machine capable of treating 1,000 g. of ore. A number of tests were made on

TABLE I—ANALYSES OF PACIFIC NORTHWEST COALS USED IN SEATTLE AND HELLER TESTS

No.	Kind of Coal	Moisture, Per Cent	Ash, Per Cent	Volatiles, Per Cent	Fixed Carbon, Per Cent	B. t. u.	Moisture and Ash-free, B. t. u.	Volatiles
1	Low-grade sub-bituminous	14.33	12.75	38.67	34.25	9,365	13,230	53.18
2	Good sub-bituminous	8.18	18.76	35.02	34.66	9,590	13,420	52.30
3	Bituminous, non-coking	2.11	25.90	29.35	42.64	10,505	14,600	40.80
4	Bituminous, coking	1.48	24.39	28.08	53.95	11,216	15,135	37.90
5	Semi-anthracite	2.00	13.43	11.13	73.44	12,745	15,065	13.15

each coal, using various oil mixtures and varying the physical conditions, for it had been found that coals, like ores, react to flotation differently and that, in consequence, the best conditions must be found for each case. Only the tests made under what proved to be the better conditions are herein reported.

In preliminary tests great difficulty was found in obtaining clean flotation with finely-ground coal and consequently the tests were made with coal ground to a fineness that would enable it to pass a 65-mesh sieve. The Trent tests by Mr. Heller were made on coal in a whole series of sizes, so that by interpolation of his figures it was possible to get the figures on the Trent process when operated with a 65-mesh coal, thus making it possible to compare the results made with this process with those attained when using froth flotation.

The flotation froth was divided into two parts; the first portion was regarded as more or less clean concentrate and the second was regarded as middlings. Later work has proved that the clean coal tends to float first and that the more boney coal then follows, so that our middlings may be regarded as representing the more boney fraction of the coal.

The figures that have been compared with the Trent figures are the average analyses of the first and second froths together with the total extraction of combustible matter made in these two froths. Frequently the second froth was very high in ash and when averaged with the first froth gave a final concentrate that was

TABLE II—RESULTS OF FROTH-FLOTATION TESTS, PACIFIC NORTHWEST COALS

Coal Sample	Per Cent of Ash in Feed	First Froth		Second Froth		Tailing		Total Froth	
		Weight, Grams	Ash, Per Cent	Weight, Grams	Ash, Per Cent	Weight, Grams	Ash, Per Cent	Weight, Grams	Combustible Matter, Per Cent
1	15.26	225	12.24	467	13.50	175	25.28	13.15	81.7
2	20.81	425	14.38	...	...	20	66.18	14.38	97.1
3	26.46	690	15.52	...	...	230	36.82	15.52	80.0
4	24.75	230	16.65	195	16.29	38	68.55	16.55	76.0
5	13.70	812	18.41	...	...	175	63.90	18.41	90.0
		643	15.81	175	35.90	172	60.00	19.68	89.5
		785	15.46	108	42.45	100	79.22	18.81	96.4
		477	6.33	487	16.63	35	67.23	11.51	98.4
		915	10.08	...	...	73	59.87	10.02	95.1

higher in ash than was found necessary by parallel tests in which not so much boney coal was allowed to float. Some of our tests were made without producing a second concentrate but merely first concentrate and tailing. The froth-flotation results used for comparison with the Trent process work are contained in Tables II and III.

The Trent process tests on 65-mesh coal—the same sizing as that used for froth flotation work—were made with a heavy thick fuel residuum oil. No light oils were tried in these tests, but in working with 300-mesh material, results obtained with light oils were far better than those in which heavy oils were used. This is shown in Tables V and VI. The quantity of ash retained in the final product increases with the viscosity of the oil, and the final combustible recovery decreases somewhat.

From this one is led to believe that if in the Trent work on 65-mesh coal, instead of fuel residuum, oils of a viscosity similar to those employed in the froth-flotation tests had been used, the resultant oil-coal Trent product would have been much lower in ash than is shown in Table IV. In the work at Berkeley the Trent Process Corporation experimenter decided to center his attention on the use of heavy oils, owing to their low cost and the fact that the final product could be used directly as a fuel. When using the more expensive lighter oils, the final product must be subjected to a low-temperature distillation for the recovery of the oil, and this was one phase of the Trent process which it was decided to leave for later work. Another phase of the Trent process where heavy oils are used, and which was studied in detail from a laboratory standpoint at Berkeley, was the complete distillation of the final product with the recovery of oil from both the coal and the oil of the amalgam. This latter work will not be reported here.

The coal was ground to pass a series of progressively finer screens and treated with the proper portions of water and fuel residuum oil in an agitator until the coal had passed into the oil and the ash was left in the water. They were then separated and the two products analyzed. The percentage ash in the cleaned coal was determined and from this the percentage recovery

TABLE III—OIL MIXTURES USED IN FROTH FLOTATION TESTS

Coal Sample	Oils	Lb. per Ton
1	4 kerosene to 1 pine oil	6
1	5 kerosene to 1 hardwood creosote	6
2	Crude pine creosote	4
2	Crude pine creosote	2
3	Kerosene	4
3	Pine oil	1.5
4	Mixture X-cake and xylidin	3
5	Pine oil	2.5
5	Kerosene	2

of combustible materials was calculated on each test. All of the combustible recoveries were well over 95 per cent and are presented in the curves at the top of Fig. 1. The percentages of ash in the various products are plotted in the lower set of curves of Fig. 1, and the numbers of the coal samples are given in the right-hand margin.

From these curves the data on the behavior of coal ground to pass a 65-mesh screen were interpolated.

The average results of the froth-flotation and Trent heavy-oil tests are given in Table IV, which assembles side by side the percentage of ash in the concentrate and the percentage of recovery of combustible material when the various coals are crushed to 65-mesh and treated by the Trent process or by the froth-flotation process, each using suitable oils.

In Table V are shown also the Trent process results on coal ground to pass a 300-mesh screen, which probably is the limit of any possible commercial grinding, giving a comparison of results with the heaviest and the lightest oils employed. The results with fuel residuum in Table IV on 65-mesh may be compared with the same oil in Table V on 300-mesh. Table VI shows the results in the use of different grades of oil.

With the exception of sample No. 2, which was refractory to froth flotation, the grades of concentrate

TABLE IV—COMPARISON OF WORK DONE BY TRENT AND FROTH-FLOTATION PROCESSES

Coal Sample	Trent Process				Flotation			
	300-mesh		65-mesh		65-mesh		65-mesh	
	Concentrate Ash, Per Cent	Coal Recovery, Per Cent	Concentrate Ash, Per Cent	Coal Recovery, Per Cent	Concentrate Ash, Per Cent	Coal Recovery, Per Cent	Concentrate Ash, Per Cent	Coal Recovery, Per Cent
1	9.0	99.5	13.5	99.0	13.8	90.4		
2	10.6	98.0	13.5	98.0	15.5	80.0		
3	12.2	98.0	16.3	96.0	18.4	90.0		
4	15.8	99.5	18.0	98.5	18.8	96.0		
5	7.7	99.5	10.8	99.0	10.7	97.0		

produced by the two processes where fuel residuum is used for the Trent work are very similar, the Trent process seeming to have a slight advantage. In every case the recoveries of the combustible matter were better by the Trent process than by froth flotation. Froth-flotation recoveries were over 95 per cent for the two highest-grade coals (semi-anthracite and bituminous coking) but were lower for the lower-grade coals.

By examining Table II, however, it will be seen that the froth-flotation process can remove part of the coal in a first concentrate which will be much lower in ash than where a single bulk concentrate is made. In other words, the cleanest coal floats first and later the more boney coal. In this manner a cleaner product can be made by froth flotation than that shown in Table IV if recovery of combustible matter is sacrificed. The Trent process makes only one separation: combustible material and relatively clean ash residue. It does not provide any middlings. In other words, most of the bone or boney coal is collected with the clean coal. On the 65-mesh coal tested the first fraction of the flotation froth was lower in ash than the Trent amalgam. Each process evidently has its advantages over the other.

Where it is permissible to burn the mixture of oil and coal produced by the Trent process, froth flotation would be at a disadvantage, as it would be necessary to dewater the concentrate before it could be burned. Where the oil used for the Trent process is too valuable to be used as a fuel, however, it must be recovered and in comparison it probably is easier to dewater and dry a froth-flotation concentrate than it is to distill

TABLE V—TRENT PROCESS TESTS ON 300-MESH COAL

Coal Sample	Fuel Residuum		Gasoline	
	Concentrate Ash, Per Cent	Coal Recovery, Per Cent	Concentrate Ash, Per Cent	Coal Recovery, Per Cent
1	9.0	98.9	8.10	97.77
2	10.55	98.5	8.00	89.60
3	12.2	97.4	8.00	91.85
4	15.80	98.45	12.80	98.70
5	7.50	99.40	6.10	99.10

and condense the oil from a Trent "amalgam," leaving the coal behind. But where oils of this type are used the final coal is lower in ash than that obtained from flotation.

The ability of the Trent process to operate successfully on finely ground material gives it an advantage over froth flotation, which latter process seems to meet difficulties when treating finely ground or slimed material. On material between 10- and 100-mesh froth flotation promises to be a strong competitor of the coal-washing table. The table does not do very good work on the sizes smaller than about 48-mesh. The way to float 200-mesh coal on an oil froth doubtless will soon be discovered, however, as there are already several promising lines of attack in sight.

It is probable that the laboratory test of the Trent process could be profitably used by froth-flotation experimenters as a check on their work, as the Trent result would represent the best grade of concentrate that could be made consistent with a high extraction of combustible matter, and thus afford a criterion by which to judge the perfection of the froth-flotation tests.

Where clean, finely divided coal is wanted for diluting fuel oil, as used for combustion purposes, the Trent process probably will find an important field. However, for boney coals, which are not cleaned by the Trent process as much as is desirable, the floating of the clean portion of the coal by froth away from the boney portion will give a froth concentrate which can be mixed with the fuel oil immediately, allowing the clean coal to pass into the oil and thus getting rid of the water without filtering or drying the froth concentrate. In this way the two processes could supplement each other.

From the preceding it can be seen that one of the most important things to consider in comparing the two processes from a commercial viewpoint is the use to which the coal concentrate can be put. The froth-flotation concentrate has been used in a number of collieries in England, but so far only in preparing coking coal. A Trent-process plant is now in operation at Alexandria, Va., producing amalgam direct for the market, and several hundred customers are trying it for various purposes, such as industrial fuel, firing boilers, furnaces, etc., as well as for bakers' ovens, glass works, fertilizer works, and even cooking stoves in hotels and restaurants. As a domestic fuel it may also prove to be of great interest, as it is said both to ignite easily without the use of kindling (requiring only a little paper) and burn without forming clinker.

TABLE VI—TRENT TESTS OF NO. 3 COAL, WITH VARIATION IN KIND OF OIL USED

Kind of Oil	Relative Viscosity	Ash Original, Per Cent	Final Ash, Per Cent	Coal Recovery, Per Cent
Gasoline.....	0.95	25.9	8.0	91.85
Crude benzol.....	0.97	25.9	9.4	90.94
Kerosene.....	1.0	25.9	9.5	93.14
30 deg. (Stove) oil.....	1.3	25.9	9.6	95.94
25-deg. Crude oil.....	5.0	25.9	11.8	96.74
18-deg. Fuel residuum.....	50.0	25.9	12.2	97.40
10-deg. asphaltum.....	Very high	25.9	13.5	98.23

It is being used also in the manufacture of municipal gas. From the foregoing these conclusions can be drawn:

(1) Froth flotation and the Trent process, when applied to the cleaning of various coals ground to pass a 65-mesh sieve for the purpose of preparing a low-ash fuel, gave very similar results under conditions which were most favorable to the froth-flotation work and somewhat unfavorable to the Trent work.

(2) Under these conditions the grades of concentrate made by the two processes were almost identical for all kinds of coals tested, with a slight advantage in favor of the Trent process when heavy oils were used and a pronounced advantage when light oils were used.

(3) The extractions of combustible matter are higher in the Trent process, the differences being slight for semi-anthracite and coking bituminous, but up to 5 or 10 per cent for the lower grades of coal.

(4) The Trent process carries the boney coal into the "clean" coal product whereas it is possible by froth flotation to carry the cleanest coal into a first concen-

trate and the boney coal can then be taken off in a second concentrate, which can be segregated, if desired. For this reason the froth-flotation process is the more flexible of the two.

(5) The Trent process has been operated successfully on material that has been ground to pass a 300-mesh screen, whereas froth flotation has been successfully used to date only on material ground to pass a 65-mesh screen, although good flotation work can be done on all sizes of coal but the "slime."

(6) The question of disposal of the concentrate is most important in considering the value of a process and though each process is now in use the field of usefulness of the two products is still largely to be determined; it is possible that the two processes could even be used to advantage to supplement each other.

(7) As at present developed froth flotation is competing with the coal-washing table for cleaning fine granular portions of coal, whereas the Trent process is in use for the more finely divided and slimed coal.

20,000,000 Tons of Byproduct Coke Produced During 1921

Byproduct coke and coke byproducts produced or sold during 1921 in the United States, according to final returns from all operators to the U. S. Geological Survey, amounted to almost 20,000,000 net tons, which was the Survey's earlier estimate of production for the year. Nearly 29,000,000 tons of bituminous coal was charged into the ovens for making this coke, and there was produced from this coal also 1,800,000 net tons of screenings or breeze.

Some of the salient figures for this industry are given by R. S. McBride in the following statement, which shows the extent of the development of the industry by the addition of new ovens and the present maximum capacity of the industry for the production of coke.

TABLE I—SALIENT FIGURES OF BYPRODUCT COKE INDUSTRY IN 1921

Byproduct ovens:	
In existence Dec. 31, 1921.....	11,141
New ovens completed during year.....	483
Under construction at end of year.....	85
Oven capacity (maximum estimated) at end of year:	
Daily (net tons of coke).....	120,149
Annual (net tons of coke).....	43,854,000
Coal charged into ovens:	
Quantity (net tons).....	28,813,111
Average value (per net ton).....	\$4.82
Byproduct coke produced (net tons).....	19,749,580
Average yield of coke from coal (per cent).....	68.5
Coke used by producer (net tons).....	13,470,396
Furnace and foundry coke sold:	
Quantity (net tons).....	3,329,709
Average value (per net ton).....	\$7.47
Domestic and other coke sold:	
Quantity (net tons).....	1,679,911
Average value (per net ton).....	\$8.22
Screenings and breeze:	
Produced (net tons).....	1,831,110
Used by producer (net tons).....	1,472,619
Sold (net tons).....	205,867
Average value (per net ton).....	\$2.30

Statistics for each state regarding coal charged, byproduct coke produced, screenings or breeze produced, and the sales and value of sales during the year are given in Table II. Much more than half the coke produced is used by operators who own ovens as a part of steel or pig-iron plants. Nearly all the coke produced in these plants is used by the producer and is therefore not reported in these tables as sold. The difference between production and sales thus is very large. A considerable part of this difference was stocked but probably not over 10 to 15 per cent of the output.

Table III is a summary of the production, sale and value of all the important byproducts from coke-oven operations during the year 1921. The quantities of these byproducts were somewhat greater than appeared probable from the quantity of coke reported to the Survey currently during 1921, and some of the estimates prepared early this year were therefore a little below the final figures here given.

TABLE II—BYPRODUCT COKE INDUSTRY, BY STATES, IN 1921

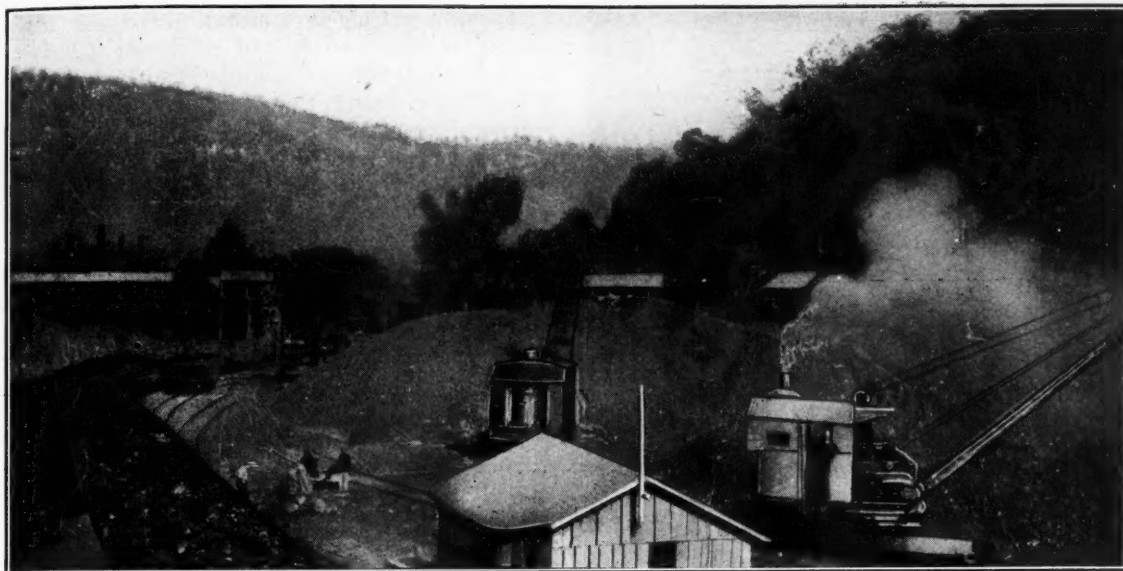
State	Coal Charged Into By-product Ovens Net Tons	By-product Coke Produced Net Tons	Screenings Or Breeze Produced at Byproduct Ovens Net Tons	Total Sales of Byproduct Coke and Breeze Net Tons	Value
Alabama.....	3,476,923	2,401,127	155,568	363,705	\$1,935,499
Colorado.....	417,112	286,755	23,492	18,137	155,071
Illinois.....	1,952,358	1,322,178	123,061	565,390	5,176,513
Indiana.....	4,342,467	3,091,263	254,056	228,950	1,865,325
Kentucky.....	257,854	185,383	10,066	194,010	1,096,192
Maryland.....	395,526	292,439	19,034	103,110	853,691
Massachusetts.....	399,935	294,059	23,984	304,214	(a)
Michigan.....	1,203,524	777,125	58,848	548,920	4,704,141
Minnesota.....	630,173	435,866	42,329	138,144	1,451,830
New Jersey.....	1,064,960	739,768	60,621	447,391	(a)
New York.....	1,098,014	746,916	54,868	385,476	3,108,392
Ohio.....	4,375,992	2,966,273	327,672	529,799	2,590,988
Pennsylvania.....	7,865,395	5,303,371	587,287	800,999	4,770,319
Tennessee.....	79,911	57,723	958	32,538	173,340
Washington.....	43,570	23,765	6,594	704	4,928
West Virginia.....	277,345	188,355	15,578	68,204	308,513
Missouri.....					
Rhode Island.....					
Wisconsin.....	932,052	637,214	67,094	485,796	10,954,307
	28,813,111	19,749,580	1,831,110	5,215,487	\$39,149,049

a Included with combined states. b Includes values for states entered as "a" above.

TABLE III—BYPRODUCTS FROM COKE-OVEN OPERATIONS IN 1921

Product	Unit	Production	Quantity	Value	Average Value
Tar:	Gallons	253,051,649	135,293,047	\$5,645,309	\$0.042
Ammonia:					
Sulphate.....	Lb.	528,638,763	530,041,716	\$13,100,703	\$0.025
Anhydrous or free ammonia (NH ₃ content).....	Lb.	31,899,398	35,102,561	3,515,416	.100
Other forms (NH ₃ content).....	Lb.	191,162	53,993	10,135	.186
				16,626,254	
Sulphate equivalent of all forms	Lb.	657,001,003	670,667,932		
Gas:					
Used under boilers, etc.....	M cu.ft.	a310,188,713	12,122,777	1,120,087	.092
Used in steel or affiliated plant.	M cu.ft.	a310,188,713	98,352,049	10,593,204	.108
Distributed through city mains.....	M cu.ft.	a310,188,713	43,826,172	14,249,961	.325
			154,300,998	25,963,252	.168
Light oil and derivatives:					
Crude light oil.....	Gallons	b76,917,269	2,433,078	240,111	.099
Benzol: Crude.....	Gallons	1,494,329	1,536,312	343,463	.224
Refined.....	Gallons	4,912,131	5,302,709	1,268,258	.239
Motor fuel (or motor benzol).....	Gallons	48,052,882	50,022,573	8,966,686	.179
Toluol: Crude.....	Gallons	26,529	26,529	4,410	.166
Refined.....	Gallons	942,982	802,964	228,968	.283
Solvent naphtha.....	Gallons	3,822,776	2,881,656	510,509	.177
Other miscellaneous products.....	Gallons	590,173	291,635	12,310	.042
Naphthalene: Crude.....	Lb.	c60,998,737	63,303,456	11,574,715	.....
Refined.....	Lb.	2,827,756	1,652,466	40,659	.025
		115,229	331,057	18,676	.056
		2,942,985	1,983,523	59,335	.030
Other products.....				121,813	
Value of all byproducts sold.....					\$59,990,678

a Includes gas wasted and gas used for heating retorts.
b Of this amount 75,760,334 gallons were refined on the premises to make the derived products listed.
c Excludes quantity of crude light oil refined on premises.



Converting Half Time to Full Time by Coal Storage

Safe to Start Operation Without Even Promise of Cars—Steady Work Improves Morale and Makes It Easy to Get Best Men—Cost of Stocking Less Than Four Cents per Ton Mined

By W. R. PECK*
Coal Creek, Tenn.

THE Black Diamond Collieries, of Coal Creek, Tenn., first started to store coal at their mines in 1918, during the war period. The plan used that year was not satisfactory, and in 1919 another plan was tried, a pit being used in which the coal was dumped and a derrick with a bucket to handle the coal from pit to storage. This method had such limited possibilities that it could be used only on those days when the mines were supplied with only a part of the cars needed—that is, if the mines had cars to run six hours, the storage would take care of the rest of the day or of the two hours at the end of the run. Due to the limited storage space afforded by the derrick, a locomotive crane was soon purchased, and in 1920 the yard was laid out as shown on page 917 and put into successful operation.

The equipment for the yard at present consists of a 35-ton locomotive, one 12-ton Industrial crane, one 20-ton Orton & Steinbrenner crane and four 24-yd. dump cars. These latter can be made to dump on either side, and are discharged into the pits. The coal is handled from these pits by cranes. The cranes are operated in many ways, as the yard is arranged so that both can work from either pit A or B at the same time, or so that one crane can work from one pit and the other crane from the other pit, or so that one crane will handle coal from the pit and the other crane will handle it to the back side of the storage yard. Each evening after the run is over, the cranes clean out the pits

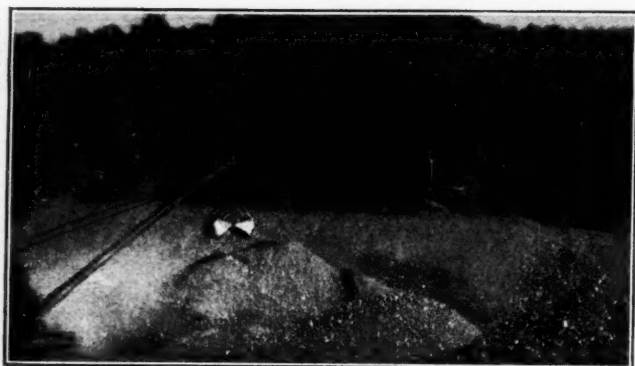
and, if necessary, work overtime by transferring coal so that there will be plenty of available storage space close to pits for the next day's work.

When the car supply is short, the railroad cars are used for the shipment of the larger sizes of coal and the steam sizes are sent to the storage yard. It has been found that the locomotive cranes will handle about a third more of the steam sizes than they will of run-of-mine coal in the course of a day, for with the former the buckets can pick up their maximum capacity, whereas in handling run-of-mine, lumps often get between the jaws of the bucket and cause the fine coal to spill. Another reason for storing steam coal is that when run-of-mine is stored, the handling of it soon reduces it so that it can be sold only for boiler use, whereas the handling of the steam coal has little effect on its size.

Due to the lack of market, these mines operated only 35 days in the first ten months of 1921, but they resumed operations in November, 1921, on reduced wages and operated three to four days per week until May 1, 1922. From that date until the present time they have operated six days per week, with a car supply averaging for that period only 50 per cent; this six-day-a-week operation is due entirely to the storage yard.

Regardless of the many other evils that enter into the production of coal, the one great evil that always confronts the operator and the miner is that of "No railroad cars." The Fact-Finding Commission now in session should give careful consideration to the short-

*Engineer, Black Diamond Collieries.



MEN REPORT FOR WORK WITH NOT A CAR IN SIGHT

With a shovel on the ground the men have an assurance that there will be work even if the railroad empty train does not put in an appearance till late in the afternoon. This gives a mine far fewer uncertainties than usual.

age of transportation equipment, its direct effect upon the price which the public has to pay for coal and the heavy losses that it causes the mine operator and the mine laborer. The recent coal and rail strikes have emphasized this fact.

On page 917 appears a chart prepared for the month of October, 1922, to show the effect on the mines of the short car supply and how by the aid of the storage yard they were able to operate six days per week with only 60 per cent of their full-car quota. In this, the Coal Creek, field for some time past the railroad agent has been unable until the early morning to advise the mines how many, if any, cars they will receive for the day's loading. In many instances the agent has stated that no empty cars will be available, and in less than an hour's time has advised that the engine is on the road with several empties.

Where no storage yard is provided, a report of "No cars" will cause the officials to keep the mines closed on that day, even though the railroad agent may be able to announce, after he has called the second time, that empties will be forthcoming. This is the one important advantage of a storage yard, for if you will refer to the chart you will see that out of the 26 work days in that month, on only nine days were there sufficient empties on hand before work time, 7 o'clock, to start the mines. On six of the other days the railroad was not able to place cars until after 11 o'clock. Do you think that the miner would have waited in his working place for his first empty mine car until 11 a.m. or that the shiftman would have remained at his post without pay to go to work at that time? But with the coal going to storage the mines were ready to commence to load railroad empties even when the railroad had to delay the placing of them until 2 p.m. In some instances the train crew that delivered the empties have taken away loaded as many as seven of those same cars. This was due to the fact that the miner was loading coal, that the shiftman was at his post and that the storage yard could at once change from the operation of receiving coal to that of loading it into railroad cars.

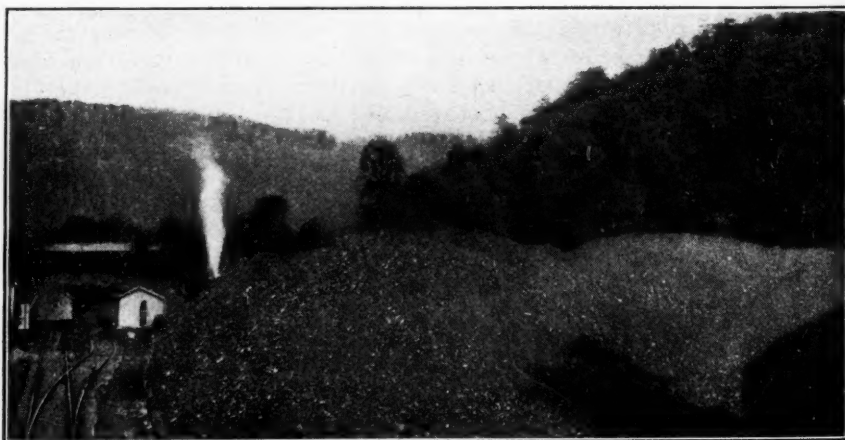
A storage yard of this kind at the mine is a benefit to the operator and miner, it is an assistance to the rail-

road company upon whose lines it is located, and it is indirectly an aid to the public. Its advantage to the operator is self-evident, for by giving practically continuous operation it materially reduces his costs of operation, maintenance and overhead; it aids the miner by assuring him of regular employment, and these mines have found that this advantage to the mine worker is a benefit to the operator also in that steady employment attracts the best laborers—the men who want to work six days per week, and who save their money, the laboring men that can go to the pay window with a smile and be greeted with a smile, for most operators now realize that the man who draws good pay and saves it is by far the best workman. The storage is an aid to the railroad and to the public in that no matter how late empties are placed, they can be loaded out that day, thus giving a quick turnover of the empty cars.

In the month of October these two mines, for they are small operations compared with the big producing mines of the North, produced a total of 25,990 tons of coal; 21,258 tons was shipped, 7,836 tons was placed in storage, and 3,998 tons was loaded out of storage and shipped. In fact the 11,834 tons of coal was handled by one of the two cranes. This tonnage was handled at a cost of 0.063c. per ton, including the cost of operating and maintaining the locomotive, the "six spot," which of course paid its way in the handling of railroad cars alone, as you can see from the chart that it placed empties by going to the "Y" after them instead of waiting until the railroad crew finished other switching and was able to place them. The storage-yard cost on the whole mine tonnage was 0.037c. per ton.

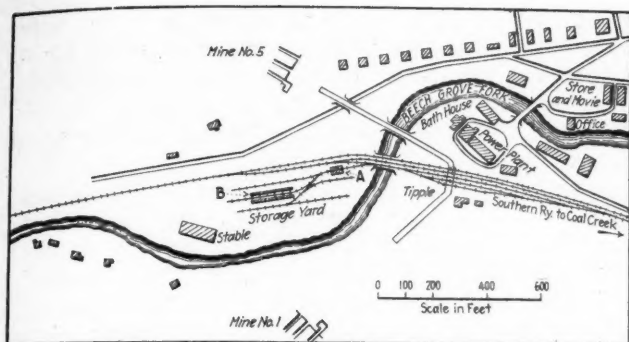
The cost of the installation of this storage was, in round numbers, \$10,000 for pits, railroad tracks and the experiment with the derrick. The pits are concrete, A being 44 ft. long, 22 ft. wide and 8 ft. deep, with a trestle so that railroad hopper-bottom cars may be dumped if necessary, whereas the two pits at B, one on each side of the track, are 120 ft. long, 10 to 12 ft. wide and on an average 4 ft. deep. Concrete retaining walls hold the track between these pits.

Fortunately this coal has so far shown no signs of heating. Thermometers are kept in the stockpile at all times and are read at regular intervals; the coal



WITH A PILE LIKE THIS ON HAND THE RAILROAD NEVER PLACES A SINGLE CAR IN VAIN

Any slack car which is not filled out under the tippie can have its quota completed at the stock pile and so can be billed out and if cars are put in so late that they cannot be loaded that day from the mine, the slack pile is handy and the railroad may be sure of its quota.



PLAN OF VILLAGE, OPENINGS AND TIPPY YARD

A and B are the pits into which the coal is dumped for transference to the storage piles. Pit A measures 22 x 44 ft. in horizontal dimensions and is 8 ft. deep. The pits marked B are on either side of the track and measure in plan 10 or 12 ft. by 120 ft.

is piled to a maximum depth of 30 ft., and the highest temperature so far recorded has been 96 deg. F. On Oct. 31 27,000 tons of coal was in stock, with room for approximately 13,000 more tons, for the yard has a maximum capacity of 40,000 tons.

RELIES ON EXPERIENCE, DESPITE CAR SHORTAGE

Some may wonder how this company expects to dispose of this storage coal without loss with the present railroad car supply, which, in fact, seems to be getting worse instead of better. This company is relying on its past experience, for on Dec. 1, 1920, this yard had 13,000 tons of coal, and on Dec. 24 it was bare, ready for the shutdown of Jan. 1, 1921. This coal was moved at a good profit. What has happened in the past is quite likely to occur again. In this connection it may be said that for accounting purposes this coal is credited to the mines as if it was sold at the cost of production and storage, and when moved a loading charge is deducted from the selling price.

Of course all mines do not have ground available that can be used for the storing of coal, but where it is possible to put in a storage yard with equipment that can handle the mine or mines at their full capacity for a day's running time, it is a paying investment, even if the coal is finally moved only at cost. The

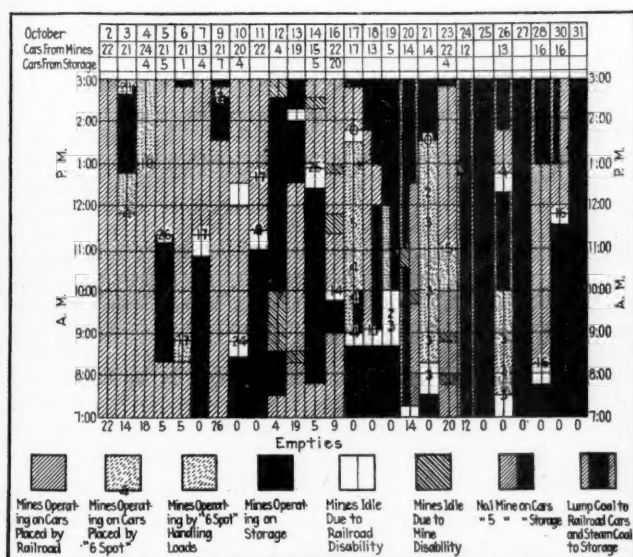


CHART OF OPERATION FOR OCTOBER, 1922

"Six-spot" is the locomotive of the coal company which assisted in keeping the mine in operation. It will be noted that only on nine days in the month were sufficient cars on hand to start the mines.

profit is in steady operation, in a better class of mine labor, in better satisfied men and in a good organization that will hold together for the better times ahead.

Springs Steady Gate Hooks of Horn Dump

BY CECIL ROWE*

Tokay, N. M.

SOMETIMES when using horn dumps the lugs of the endgate of the car fail to engage in the stirrup, or lifting hook, allowing the car to tip over without the endgate being opened. When the cars used are large and the material to be dumped is heavy, the contents come against the door with much force and sev-

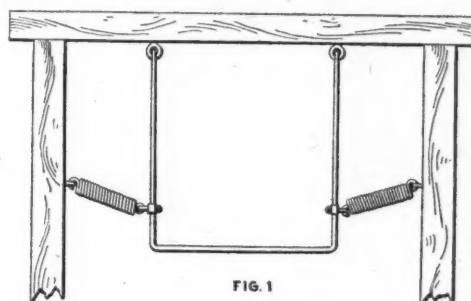


FIG. 1

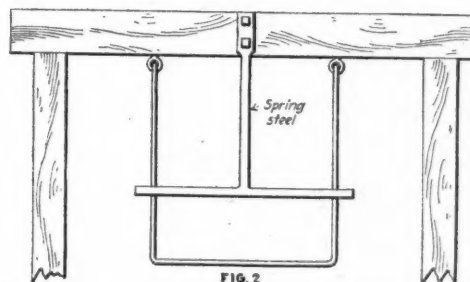


FIG. 2

GATE HOOKS THAT DON'T SWING OUT OF PLACE

The upper gate hook has a longer term of service than that below, the long steel spring soon losing its resilience.

eral men are required to pry it open. In consequence much time is lost at the tippie. To overcome this difficulty two devices have been used. In Fig. 1 the piece to engage with the end lugs of the door was held from swinging by placing a helical spring on either side as indicated. In Fig. 2, which was for a different style of car, the stirrup was held in place by a piece of spring steel securely fastened to the top timber by bolts.

The device shown in Fig. 1 was found to be much more satisfactory than that shown in Fig. 2, for the helical springs stood the shock of dumping much better and for a long time continued to return the stirrup to its normal position. The spring steel, shown in Fig. 2, soon became distorted, making a frequent change of that part necessary.

*Mining engineer, B. H. Kinney coal mine.

LEGISLATION EMBODYING THE ADMINISTRATION'S PLAN for the reorganization of the government's executive machinery probably will be introduced during the December session of Congress. If the draft of the bill cannot be perfected in time to insure action during a session which necessarily must be devoted largely to appropriation bills, it will be taken up at an extra session which it is believed will be called next spring. It is understood that the administration bill will not provide for a Department of Public Works. There will be a grouping, however, of public works activities under an assistant secretary.

How to Make Stubborn Pumps Pick Up Water

BY JOHN WALLS, SR.
Bayview, Ensley, Ala.

IN MANY mining districts of the United States are small and comparatively wet mines that cannot or think it unnecessary to afford a complete mechanical department. In these the pump tender is held more or less responsible for the successful operation of the pump or pumps under his charge.

Nothing perhaps causes so much annoyance in the operation of gathering pumps as a failure to advance them as the workings extend. In consequence the tail pipes soon become excessively long. Furthermore, in pumping from working places no foot valve is used, because it is necessary to run the pump on air for some time in order to insure that the place be thoroughly dried. A stop valve is used, however, in each suction line.

In order to operate gathering pumps successfully under the condition mentioned and yet run the pump until the limit of suction is reached, no better method probably can be devised than to connect the water cylinder and tail pipes with the permanent spraying system by small pipes having stop valves. The pump and tail pipes usually can then be primed at any time, and to insure that the pump will not "lose its water," also to prevent injury to the packing in case the pump is allowed to run on air for a long time, a stream of water can be allowed to enter the pump continually from the spray line or the discharge line, and the suction line can be connected by a small bypass with a stop valve.

But it sometimes happens that no provision is made for priming the pump and keeping it primed, and the pumper is then put to his wits' end to get the pump to "pick up its water." If the pump valves and packing are in doubtful condition they should be tended. They may need scraping and greasing or turning over. This attention may help much to make them seat properly.

USE SHORT SIPHON FOR PRIMING PUMP

When it is known that the pump is in good condition and that the only disadvantage under which it is laboring is the length of suction line, the latter may sometimes be nearly filled by siphoning from a suction nozzle near the pump. The pump draws water through this nozzle and is stopped as soon as the tail pipes are filled almost to the level of the water supplying this nozzle.

Another way of helping the pump to get into effective action consists in allowing the nozzle of a suction line, where it is long, to get water and air alternately at short intervals until the pump "catches" and "holds" the water. The principle used probably is that of the air lift; the atmospheric pressure is able to support a higher column made up of air and water than if only water were allowed to enter the suction column. The nozzle should be so arranged that it can always be lifted above the water; large nozzles attached to rigid pipes should have a chain attached; the latter should be swung over a pulley and a swivel joint used in the pipe line so that the nozzle can be lifted for inspection or air entry.

The pump works on the principle that the difference of pressure between that end of the water cylinder that is connected with the suction and the outside atmosphere, forces water through the suction line and into the pump. In common pumping practice this pressure

is applied gradually as the water cylinder, valve chambers and suction pipes become depleted of air by exhaustion; but by *suddenly* applying this difference of pressure, wonderful results are obtained in overcoming the obstinacy of pumps to the "picking up of water."

Some station pumps that are provided with large sumps are shut down during week-ends and if the pumper is not careful to make the last run on clear water and shut down before the pump gets on air, he is likely to have much trouble on Monday morning.

I remember being called to assist in priming a large triplex plunger pump that had been closed down during a weekend and had lost all water both in the suction line and the discharge column; the valves were dried out and warped, and a crew of men had to carry water from the sump 100 ft. distant for two hours before this pump could be made to do its duty, although it had only 100 ft. of tail pipe and a 4-ft. lift.

Some of the mine officials were much concerned, as this trouble seemed likely to occur weekly. The assistant superintendent accidentally hit on the plan of applying the atmospheric pressure suddenly, as just stated, and the results have been most gratifying. I have tried the kink myself on many occasions. Even when the pump had been operated by ordinary methods without success until the water cylinders became warm and so long that any mechanic would have pronounced the attempt hopeless, this method never failed provided the pump valves and packing were in good order.

The method, which is as follows, requires a valve in the suction line close to the pump: Start the pump with the valve on the suction line open. Allow the pump to run until little air is being discharged from the waste or starting pipes. Then close the valve on the suction line and allow the pump to run from 5 to 10 minutes longer. That period over, open the valve on the suction line very quickly, then watch the water come. I tried this method also on a large 10x18-in. triplex plunger pump with 400 ft. of tail pipe, an 11-ft. lift and no priming water. The pump had a reputation for obstinacy but it was pumping water 15 minutes after starting and the pump mentioned earlier as causing so much trouble can at any time after a weekend shutdown be made to operate successfully without priming in from 15 to 20 minutes.

IN THE GENERAL STUDY of the heat of distillation of coal, being conducted at the Pittsburgh (Pa.) Experiment Station of the U. S. Bureau of Mines, the problem of the effect of the inert atmosphere in which the distillations are conducted has been studied. In a series of special tests, atmospheres other than nitrogen and hydrogen were tested. Illinois coal which gave 60 c.c. of gas and an exothermic reaction of 22.5 cal. at 600 deg., in nitrogen, gave, in hydrogen, an endothermic reaction of 12 cal. with gas absorption amounting to 60 c.c. All other coals of the series gave gas evolution in nitrogen and gas absorption in hydrogen. This means that the net reaction heat during distillation is dependent on the partial pressure of hydrogen in the reaction products. This heat effect with hydrogen is regarded as the most important development of the whole research.

IN THE COURSE OF TESTS made at Pittsburgh, Pa., by the U. S. Bureau of Mines, lignite char has been found to burn to a gas containing a higher proportion of carbon-monoxide than that from coke. To determine if this relatively high carbon-monoxide content with lignite char is to be attributed to the smaller size of the char, coke of the same size as the char will be burned on the next tests.

Safety Precautions at Dolomite Prevented Explosion From Killing All the Men in That Mine

Blast Took Place in Intake Airway and Burned Tipple Roof a Long Way from Mine, Yet Spread Over Only a Limited Area of the Workings, Thanks to Safety Provisions

BY H. S. GEISMER*
Birmingham, Ala.

A LOCAL dust explosion caused by three cars running wild down an 880-ft. 30-deg. slope resulted in the death of ninety persons and the injury of fifty-five more at Dolomite No. 3 mine of the Woodward Iron Co., near Birmingham, Ala., Nov. 22, 1922. The coal seam which the mine develops is flat but it is approached by a steep slope which serves as an air intake and double-track haulageway to the outside. The trip of cars broke loose at the tipple—a revolving dump handling the cars without uncoupling—and ran back into the mine the full 880 ft. without jumping the track. The gathering sidetrack is about 500 ft. from the foot of the slope. One of the cars ran into the loaded cars standing at this sidetrack, the rest of the cars being scattered along the empty track and badly shattered in consequence.

The explosion occurred almost at the foot of the slope and must have been caused by a cloud of dust stirred up by the runaway cars. The dust was ignited either by a flash caused by the cars coming in contact with a 3,300-volt feeder cable suspended along the side of the slope or else by a flame from the 250-volt trolley wire that the wrecked cars pulled down from its supports. At times the mine generates a little gas in its advanced workings but none could have been present at the point of the explosion, as it is directly in the intake current, where 60,000 cu.ft. of fresh air enters the mine. The explosion traveled back up the slope, coming out of the mine mouth and setting fire to the timber work on top of the tipple. It also traveled into the mine along the main haulageway a distance not to exceed 1,000 ft. To the right of the main haulageway a few brattices were destroyed and to the left of that roadway the explosive force traveled several hundred feet.

The lead-covered feeder cable from the outside is

carried down along the side of the slope to a substation a few hundred feet inside of the foot of the slope. Most of the machinery in this substation was damaged by the explosion and the mine fan at No. 2 airshaft, which ventilates this mine, was shut down when the current went off. This fan is equipped with an auxiliary gasoline engine and within three minutes after the explosion the fan resumed operation, and ventilation throughout the mine was immediately established except in a restricted area where the brattices were destroyed.

The explosion occurred about 3 p.m. and by midnight all the bodies had been recovered and the mine was in practically normal condition.

Of the ninety killed, probably about two-thirds met death instantly, the others being killed by afterdamp. Every inside foreman, including the master mechanic, the motor inspector and the section foreman, lost his life. Four hundred and seventy-five men were in the mine at the time of the explosion and the loss of life from afterdamp would undoubtedly have been much higher but for the number of exits that the mine contains.

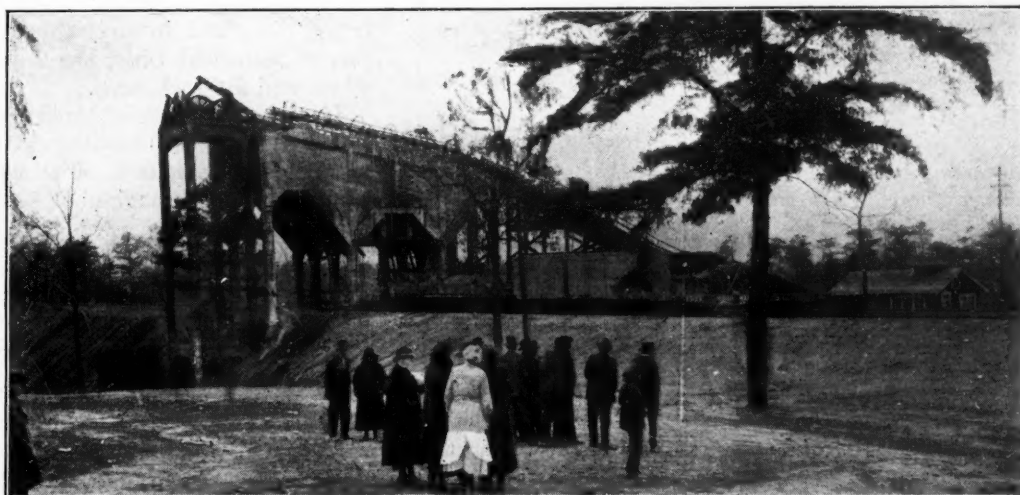
The seam was originally opened forty-two years ago with No. 1 slope; this was later followed with No. 2 slope and the workings were connected. Later No. 2 airshaft was sunk to reduce the air travel, and this was followed a few years ago with No. 3 rock slope, where the explosion occurred. The connected workings extend several miles along the outcrop of the seam and have penetrated about four miles at right angles to the outcrop.

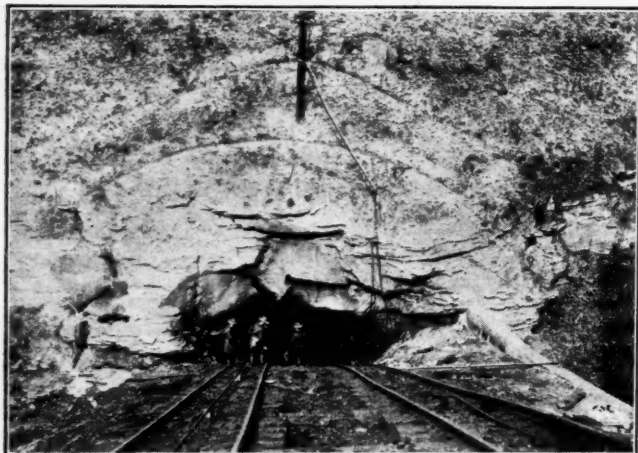
In all the forty-two years of operation no explosions have occurred. Open lights are used by the miners and electric haulage equipment and mining machines are installed throughout. Gas occasionally is encountered

*Keiser-Geismer Engineering Co.

Tipple After Explosion

Flame from the mine burned down the roof of the tipple and the water tank. Nothing was more remarkable in this explosion than the way the lambent flames from the slope traveled up the surface incline, licking up everything inflammable in their path.





DOUBLE-TRACK ROCK SLOPE INTO MINE

It was down this heavy 30-deg. slope that the uncoupled cars plunged, tearing down wires, the short-circuits from which were as fire to ignite the dust raised by the rapid movement of the cars.

in some of the advanced workings but never in troublesome quantities.

The coal mined is of the Pratt Seam and has the following analysis: Fixed carbon, 60 per cent; volatile matter, 30 per cent, and ash, 6 per cent.

That four cars traveling approximately 1,000 ft. down a 7x15-ft. slope cut through solid rock could raise enough dust to cause such an explosion is almost inconceivable, but that apparently is what happened. The Woodward Iron Co. had gone to much expense to make the mine safe. It has a special safety department to report on the condition of its haulageways.

The state mine inspectors have always reported favorably on this mine. Thus in the 1920 report E. E. Echols, the inspector of the First District, says: "Dolomite No. 3 . . . is ventilated by a large Capell fan at the airshaft about two miles from the mouth of the mine. This fan is the same as that mentioned in describing No. 1. It is electrically driven. This mine has another large Capell fan, gas-driven, stationed there for an emergency. Furthermore, a steam-driven 5-ft. Sirocco fan has been installed at the mouth of the mine for emergency use. . . . The mine is kept wet with sprays and hose. Much work has been done in this mine during the past year to improve ventilation. New and larger pipe lines have been laid for sprinkling purposes."

The report also says: "The mine has good tracks and they are kept clear." Dumped as they are on a rotary dump, the cars do not require doors and so do not spread coal along the tracks. Furthermore, there



ANOTHER VIEW OF THE DOLOMITE TIPPLE

This shows quite plainly the long 5-car cradle by which the coal is dumped without uncoupling the mine wagons. The cars at this mine have no endgates and in consequence it was possible to keep the roads clean but evidently not perfectly safe from explosion.

are no large cracks in them through which coal can leak to be scattered along the haulageway.

Dolomite mines are within four miles of Ensley and Bessemer and not more than twelve miles from Birmingham, which accounts for the large crowds that were on hand within a few hours after the explosion. Before nightfall all the roads leading to the mines were blocked with automobiles, and a company of the Alabama National Guard, assisted by deputy sheriffs, was needed to hold back the sightseers and the anxious friends of those inside. All the officials of the Woodward Iron Co., from President Frank H. Crockard down, were on hand and remained until every man in the mine had been accounted for. They were tendered the assistance of more trained rescue men than they could use. This is the first large explosion that has occurred since the Alabama Workmen's Compensation Act of 1919 went into effect.

Large Trolley Wheel for Heavy Current

RECENT tendencies in mine-haulage practice are toward the use of larger and larger locomotives which can handle correspondingly heavy trips. This, of course, means heavier currents to be collected from the



SELF-ALIGNING TROLLEY HARP FOR BIG LOCOMOTIVES

Graphite bushing with grease-filled reservoir makes the trolley wheel revolve readily. Current is collected through phosphor-bronze contact springs.

trolley line, and to meet this condition the Ohio Brass Co., of Mansfield, Ohio, has brought out a 6-inch trolley wheel and a 6-inch harp.

The wheel is made of bronze and has a graphite bushing. Around the bushing is a reservoir filled with grease at the factory. The harp collects the current from the wheel through phosphor-bronze contact springs. The pivot is set forward of the axle so that the harp trails freely.

A self-aligning harp made in both the 4- and 6-inch sizes has also been developed and placed on the market. A spring brings the fork casting into line with the pole head when the wheel is not on the wire. This simplifies the task of replacing the wheel in case of dewirements and also enables the harp to operate especially well through frogs and crossings which are in many instances the cause of much annoyance to the motorman.



Problems of Operating Men

Edited by
James T. Beard



Humidifying Air Currents in Mines in Utah

The Utah Mining Law and State Industrial Commission
—Efforts to Reduce Danger of Mine Disasters—
Requirements of the State Mining Law in Regard to Dust

IN conversation with a friend, a short time since, mention was made of the progressive character of the mining law of Utah. The law was described as being particularly enlightening and containing stringent measures designed to make mine disasters less frequent, if not impossible. In that connection, allusion was made to the efforts of the State Industrial Commission.

A little later, being interested in the subject of humidifying mine air, as recently discussed in *Coal Age*, I looked up the Utah regulations pertaining to the wetting of mines in that state. In the revised statute of 1898, I found (Sec. 1516) the following reference to the question of watering:

Water system: Every owner, agent, manager or lessee of mines within the State of Utah, shall provide and maintain a water system for the purpose of conducting water to the face of each and every working place and throughout the entire open part of the mine, in sufficient quantities for sprinkling purposes to wet down the dust that shall arise and accumulate in and around the mine: provided that in mines or parts of mines where, by reason of the natural wet condition or the moisture derived from the introduction of steam into the air current or both, such sprinkling may not be necessary. And it shall be the duty of the superintendent, mine foreman and inspector to see to it that this is done.

In addition to this, I found that the Industrial Commission had issued certain "safety orders." After drawing attention to the requirements of the state law contained in the section just given, the circular of the commission continues as follows:

It is further ordered that when and if requested by the mine operator, mine superintendent or foreman, or when conditions warrant, by the Industrial Commission, the water system shall be so arranged and a hose of sufficient length provided, for each working place or pair of working places, so that the miners can keep their own working places wet for a distance of at least 50 ft. back from the face. Also, such hose shall be provided by the operators for each and every miner who may make request therefor.

It is further stated that, "when the miner has requested the hose, it is his duty to keep his place wet." Further, "anyone who, without authority, removes or willfully damages any part of a sprinkling system, violates the law creating the industrial commission."

Not long ago, in an address describing the mining of coal in Utah, Chief Engineer, A. C. Watts, of the Utah Fuel Co., spoke as follows:

"Not the least among mine-safety precautions are the electric shotfiring systems, used in many of our mines, and the sprinkling system. Both of

these systems were used by the Utah Fuel Co., as far back as 1889, or 1890, in its Castle Gate mine. At that time, the officials of the company became convinced that coal dust would explode without the presence of gas. In order to eliminate the frequency of local dust explosions, the management caused all shots to be fired from the outside, by electricity.

INSTALLATION OF WATER SYSTEM AND SPRINKLERS FOR WETTING DUST

"As a further precaution, a complete water system was installed in the mine and sprinklers were employed to thoroughly wet down the dust. The intake air was also humidified by means of an atomizer, using steam to atomize the water. Later, a state law was enacted making sprinkling compulsory in all mines not naturally wet. In complying with this law, the common practice is to use hose, short lengths of which are attached to the pipe system or other source of supply.

"It is the custom in all our mines to flatten the end of the hose with a stiff wire, so that the water issues in a thin wide spray. In this manner, the sides, roof and floor of all roads and passageways are thoroughly wet down and kept wet. Our company has adopted the plan of running the water pipes up each room and supplying the miners with hose, 20 or 25 ft. long, which are kept attached to the ends of the pipe line. Each miner is required to keep the cuttings and dust in his place thoroughly wet.

WATERMEN EMPLOYED TO SPRINKLE ALL WORKING PLACES

"In one of our mines, the men are required to sprinkle every two hours. The machine cuttings are carefully piled up, wet down and loaded out in special cars. When these cuttings do not make a full car, mine-run coal is added to top off. The sprinkling of the rooms is not left entirely in the hands of the miners, but regular sprinklers or watermen are employed to wet down the rooms, also. It is customary to wet the cuttings of mining machines while the latter are in operation.

"Only the other day, I was asked how much water was needed to make the mine safe? Now, I will not claim that this wetting can make a mine absolutely

'safe'; for that word must be used conditionally. However, after some figuring, I estimated that we require one gallon of water to every 21 sq.ft. of surface, three times a week, in order to keep the dust in a wet condition.

"We consider that the dust is wet down when it will ball up, on being squeezed moderately in the hand, and will show the imprint of the fingers. Some of the mines make enough water, in certain sections, to sprinkle other sections that are dry; and the necessary connections are then made to utilize the inside pumps. In all cases, however, connections are maintained with the outside pumps, so that, in case of fire, it will not be necessary to depend wholly on an inside pump, which might not be available at the time. Many mines turn exhaust or live steam into the intake during the night."

It has occurred to me that these remarks and references to humidification in the mines of Utah would be of interest to *Coal Age* readers, in connection with the discussion to which I have referred.

CHARLES M. SCHLOSS.

Denver, Colo.

Underground Official Positions

Responsibilities of mine superintendents and foremen—Dangers to which firebosses are daily exposed make their work the most important.

WHEN writing on the subject of "Where Coal Mining Practice Could be Materially Improved," William Allan has drawn attention to several points where improvement is possible, both in practice and equipment.

At the close of his article, Mr. Allan has incidentally called attention to a question that must interest all firebosses. The question is suggested by the offering of a prize, by a large coal mining company in England, for the best answer to the question, "What is the most important job on the colliery?"

Now, every mine official has his own particular part to play and his own work to perform to insure the safe and economical operation of the mine, which will make the undertaking profitable to the owner. It is very possible that each of the officials of a large company may consider his job of the most importance.

With regard to the underground officials, including the mine superintendent, foreman and fireboss, it must be acknowledged that the superintendent is the responsible head, who must account to the owner or operator for every transaction in the mine.

Without any question, a mine superintendent holds an important position if the undertaking is to be performed in a manner to insure success. His duties are numerous, since he is charged with the supervision of the entire work. At the same time, all will agree that the superintendent is not required to face any special dangers in the performance of his particular work.

The same is true, but to a less extent, with respect to the mine foreman. A foreman's duties require his constant presence in every part of the mine. With his men, he must face many dangers and be held responsible to the superintendent for the safe and efficient manner in which the work is performed.

It can be said of the foreman, that he is in closer touch with the daily expenditures in the mine and the consequent cost of production, which is the prime factor in determining the ultimate success of the operation. While the superintendent must approve of all expenditures for labor, material, and supplies, the necessity for these expenditures is determined, primarily, by the manner in which the foreman conducts the work.

RESPONSIBILITIES RESTING ON THE FAITHFUL FIREBOSS

Now, let us turn and take a look at the fireboss, as he leaves his home and enters the mine in the small hours of the morning, alone and unattended. On the faithful performance of this man's duties rests the safety of every mine worker. Before him are many dangers that he must face. There are falls, pillar workings and abandoned places to examine and brattices to build.

All of this must be done and the tired fireboss must return to the shaft bottom in time to enter his report and notify the men of any dangers he may have found that make their places unsafe for work. On the shoulders of the fireboss rests the responsibility of each man's safety when he proceeds to his accustomed place in the mine.

I am glad to observe that Mr. Allan gives it as his opinion that the position of the fireboss is the most important position in the mine. I heartily agree with him in that conclusion. Unless the fireboss makes a true and safe report, there can be no production. Not only is he responsible to the company and to the men in his charge; but he must also answer to the state for any neglect or incompetence in the performance of his duties.

However, I will admit that in the absence of honest certified mine foremen and firebosses, a mine superintendent has a hard job and one that will require the most careful supervision and constant oversight if disaster is to be avoided. It is surely up to every mine superintendent to satisfy himself that the mine foreman and firebosses in his employ are men on whom he can depend, both as to their intelligence, competency and the honest performance of their several duties. THOMAS KERR.

Worthington, Pa.

Self Interest Is Chief Bar to Active Co-operation

Enlisting co-operation of employees—Self interest the dominant factor—Success attained in proportion as this principle is recognized.

MANY suggestions have been made, from time to time, by writers in *Coal Age*, in regard to different methods of securing the co-operation of employees, in efforts to make the business more profitable. It has been urged that much mutual benefit can be derived by mine officials meeting their men regularly for the purpose of discussing subjects pertaining to their work.

The aim in such meetings would be to establish familiar social relations between the officers and men. Most mining men recognize that many suggestions of practical utility and value can be obtained through an open discussion of the problems that daily arise in their mines. It is generally admitted that this social intercourse will produce kindly feelings and result in the active co-operation of every worker.

ENLISTING MEN'S INTEREST

In order to succeed along these lines, however, the first essential is to enlist the interest of the men. An interest once aroused goes a long way toward securing their hearty co-operation in the performance of each one's part in the work. Otherwise, efforts in this direction will fail, as has been proved time and again in similar undertakings.

It will be generally admitted that the interest of any class of industrial workers depends primarily on the amount of remuneration received for the work performed. On the other hand, the chief interest of the employer lies in the profits derived from the business. In each case, it is evident that individual, selfish interest is the dominant factor, and forms the basis for the antagonism that so largely prevails between employers and their employees.

Now, the common acceptance of any industrial enterprise is that it is the indisputable property of those who have invested their money in the undertaking. The paid employee, whether working on a wage or salary basis, is considered merely as an auxiliary factor whose interest begins and ends with the remuneration he receives for his services.

WAGES AND PROFITS OF BUSINESS DIAMETRICALLY OPPOSED

But, without calling into question the truth of this acceptance, it is quite evident that such a doctrine absolutely debar the worker from manifesting the same interest in the economic welfare of the industry as those having a definite monetary interest, the two factors being diametrically opposed, makes a clash on this basis almost inevitable.

A broader acceptance of industrial economics, however, has demonstrated that greater material benefit results,

both to the industry and the community it serves, when the conservation of the energy of the worker is desired. This knowledge has given rise to much judicious welfare work on the part of large employers of labor.

Nevertheless, however beneficial these efforts may be, they fall far short of engendering any permanent personal interest in the daily operation in which one is employed as a factor. Too often, the welfare work of large companies is regarded, by their men, as a matter of policy rather than one of principle, and a harmful suspicion lurks in the mind and renders these efforts abortive.

OLD RELATIONS GIVING PLACE TO NEW ASSURES INDUSTRIAL PEACE

The present industrial crisis demonstrates clearly that the old principles of relationship of employer to employee must give place to one of mutual dependence, before any permanent industrial peace can be assured. The assumed independence of capital and dependence of labor is not in keeping with the principle of equal rights, which is the foundation of our government.

Briefly stated, success in industry depends on the hearty co-operation of every factor in the undertaking; and such co-operation cannot be secured without a mutual recognition of the individual rights of both parties. In its application to industry, this means that the financial success of an enterprise involves the financial betterment of every factor in the undertaking.

So deeply does the element of self interest enter every undertaking, that the problem of securing industrial peace must be approached at this point. Only in proportion as this principle is recognized will success crown our efforts to promote harmony and bring about peace and prosperity in business.

EVERY WORKER SHOULD FEEL HIMSELF PART OF THE BUSINESS

Every wage earner must certainly be aware of the fact that if the business in which he is employed is a financial success, he is assured steady employment. This knowledge should be a sufficient incentive to him to insure his hearty co-operation and efforts to make the undertaking profitable. It should make every worker feel and act as though the business was his own.

Much has been said about the application of the Golden Rule in business. I regret to say that, in the present and past history of industrial relations, the Golden Rule is recognized more in the breach than in its observance. Unfortunately, for industrial peace and prosperity, the moral sentiment of mankind is yet in its infancy.

Speaking of practical suggestions for improvement as coming from the men, it is well known that these suggestions are not always received in the spirit in which they are given. Many practical and industrial workers are reluctant to suggest a new plan or method of performing their work, fearing that this would be regarded as reflecting on the present management.

Too often, it must be acknowledged, that men who have expressed their honest and practical opinion, in all sincerity and good faith, have found themselves marked down by some one higher in office, who may fear their ascendancy in the scale of promotion.

On this account, it is not strange that many workers regard well meaning efforts on the part of the management as schemes to trap the credulous. The credulous are invariably a class comprising the most honest and industrious workers who have the best interest of the operation at heart and who would, if given opportunity, prove themselves progressive factors.

GLEN GLONN.

Washington, D. C.

America a Modern Utopia

The ideal in life the beacon light ahead—Ideals spur to action by which worth-while deeds are accomplished.

PRIMARILY, Bolshevism was reared in Russia, under the crude teaching of Lenine & Trotsky, and the transition that has taken place from the first upheaval till now is nothing short of remarkable. Shackled with corruption, oppression and brutality, the people, ground between the upper and nether millstone of monarchical austerity and political greed, groped for light in an effort to work out their own salvation.

The struggle has been that of a downtrodden people who had to grapple with a brutal and hostile world—hostile at least to their ideals—with which, at no far distant day, I believe the world must conjure.

It was not Lenine or Trotsky that caused this enormous upheaval. It was the ideal that shone as a beacon light at the end of the struggle. Washington and Lincoln, today, are not revered so much for what they did as for the ideals for which they strove. Every worth-while accomplishment is only made possible by the ideal that shines as a beacon ahead.

IDEALS THAT HAVE NEVER BEEN REALIZED IN ANY LAND

From the latter end of the fifteenth century when Sir Thomas More wrote his "Utopia," philosophers down through the ages have conceived ideals for which, like Sir Thomas, they have suffered martyrdom. But, the world is better today for those ideals.

Sir Thomas More's "Utopia" (Good Faith) describes an imaginary commonwealth that inhabited an island. The people lived in peace and harmony through the practice of their ideals. It was accounted piety to prefer the public good to one's private interest. To seek one's own welfare at the expense of another was unjust and a crime.

Can we hope that this picture of tranquil life is a foretaste of the future of this country? It must be admitted that our economic condition, at present, is not a happy one. It is rather a reflection on our boasted enlightenment. Hoarded wealth and ab-

solute penury are next-door neighbors. On every hand, affluence and plenty are in sharp contrast with everlasting grind and want.

Reflecting on this present state of affairs we are led to ask ourselves, is this in keeping with our boasted ideals that "All men are created free and equal?" Communism, in the generally accepted meaning of the term, may be all wrong; but the ideal of human brotherhood and equal rights can never go wrong. Such ideals train

men's minds to a higher plane of living and open to our view vistas of America as a modern Utopia.

While there are dishonest men in all phases of industrial activity, the vast majority of our fellows are honest and painstaking, while groping for the light of progress in their efforts to

"Make trade a Christian possibility,
And individual right no general wrong."

ALEXANDER BENNETT.

Panama, Ill.

Inquiries Of General Interest

Developing a Steeply Inclined Seam of Coal

Main slope driven three or four abreast, on the full dip of the seam—Gangways or levels turned right and left on the strike.

HAVING in hand the development of a steeply inclined seam of coal, varying in thickness from 8 to 10 ft., roof to floor, I am desirous of ascertaining the best plan to adopt, looking to the economical extraction of the coal and operation of the mine.

The inclination of the seam varies from 42 to 45 deg. from the horizontal. The topography of the ground is such that I could drive a 20-deg. slope, on the strike or end of the coal, and proceed with the development in that way, although the plan does not appeal to me as the best one to adopt when taking all into consideration. I want to ask, would it not be more economical to drive a double-compartment incline on the full dip of the seam and use cages or skips having a capacity of, say, two cars of coal? I should be pleased to have the friendly suggestion of *Coal Age* and its practical readers in regard to this problem.

R. E. RUSSELL.

Evanston, Wyo.

The meaning of this correspondent is not clear in respect to the proposition of driving what he terms a "20-deg. slope on the strike or end of the coal." This statement would seem to suggest that the seam outcrops or reaches the surface along a line having an inclination of about 20 deg.; and it is proposed to drive the main slope heading at some distance inside and parallel to this cropping.

Such an interpretation assumes that the term "strike" and the expression "end of the coal" are used by the correspondent in a general way. The strike of a seam being level, it would not be possible to drive a 20-deg. slope on the strike. Again, the expression "end of the coal" is generally used in reference to the butts or end cleats of the coal.

The proposed driving of a 20-deg.

slope, in the manner suggested, does not appeal to us as a practical proposition in the working of this seam. In general, the main heading, in the development of a highly inclined seam, should be a slope driven on the full dip of the seam. In a large development, the main slope headings should be driven three or four abreast so as to provide separate return air-courses for each respective side of the mine, the center headings being made the main haulage road and intake.

To the right and left of these main slope headings, gangway levels are driven at such distances apart as will provide a suitable length for the chutes driven up the pitch from the gangways. The gangway levels are driven in pairs, one entry being the haulage road and the other the air-course and drainage level.

At the mouth of each level, there must be arranged a landing where the cars can be run on to the platform of an incline cage operating in the main slope. The cage can be arranged to hold two cars at a time if desired. Some prefer self-dumping skips into which the cars are dumped at each landing and are not taken out of the mine. This, however, necessitates handling the coal twice and is not recommended if the coal is soft and easily broken.

Cost of Sinking Slope

Length of slope estimated from the vertical fall on a given inclination—Calculating the amount of material excavated.

I HAVE been asked to compute the cost of sinking a slope 8 x 10 ft. in section. The slope is driven on a 25 per cent grade and has a total fall of 40 ft.; but the length of the slope is not given. Kindly explain how the cost of sinking this slope can be calculated,

the price being \$1.40 per cu.yd. of material excavated. STUDENT.

Riley, Ind.

The first step is to calculate the length of this slope, for the given fall and inclination. Estimating from the horizontal, a 25 per cent grade means a rise of 25 ft. per 100 ft. of horizontal distance. In that case a fall of 40 ft. corresponds to a horizontal distance of

$(40 \times 100) \div 25 = 160$ ft. The corresponding length of the slope is, therefore, $\sqrt{40^2 + 160^2} = 165$ ft.

The sectional area of this slope is $8 \times 10 = 80$ sq.ft. The amount of material excavated is, therefore, $(165 \times 80) \div 27 = 488 \frac{8}{9}$ cu.yd.

Finally, at a price of \$1.40 per cu.yd., the total cost of the excavation is $1.40 \times 488 \frac{8}{9} = \684.44 .

Examination Questions Answered

West Virginia Mine Foremen's and Firebosses' Examination, Charleston, 1922

(Selected Questions)

QUESTION—Before giving employment to any person, what information would you require from said person seeking employment in your company?

ANSWER—The man should state where he had been formerly employed and his reason for making a change. He should be able to give satisfactory references in regard to his character and ability as a miner. He should state his experience in coal mining and in what capacities and how long he had been employed. He should show that he has a knowledge of the mining laws of the state; that he can read and write English and is willing to be governed by the rules and regulations of the mine.

QUESTION—(a) Explain some sources where capital is tied up unnecessarily. (b) State how you would propose to lessen this amount.

ANSWER—(a) Capital invested in a mining proposition is unnecessarily tied up when the equipment secured is more than needed, or of a kind that is not adapted to the purpose in hand. This applies to all kinds of tools, machinery and supplies. Sometimes capital is tied up in the acquisition of land and other property that cannot be utilized for a long time to come.

(b) The mine foreman should not order supplies and equipment that he cannot put into immediate use. He should endeavor to dispose of such discarded equipment as may be salable and not allow its accumulation where it will eventually be thrown on the scrap pile.

QUESTION—What instructions would you give to all employees and what precautions would you take to guard against loss of life and damage to property, by reason of mine fires in and about the mines?

ANSWER—All employees should be made thoroughly acquainted with the mine rules and regulations, which must be strictly enforced. Any violations of the rules should be suitably punished.

The proper precaution to be taken in respect to danger to life and property by reason of fire in or about the mine should be such as to afford reasonable protection against fire. These rules should relate to the use of open lights; the handling and storing of combustibles and explosives; and the amount of explosives that may be taken into the mine by each miner. There should be provided an efficient water supply and apparatus and appliances for fighting fires, both on the surface and in the mine. A sufficient number of reliable men should be drilled in the use of the apparatus and understand their duties if an alarm of fire is sounded. At such times, it would be the first duty of the mine foreman and his assistant to notify and withdraw all the men from the mine.

QUESTION—Describe what system of ventilation and general supervision you would adopt in order to keep your mine in a safe condition.

ANSWER—All ventilating apparatus must be kept in good condition and be capable of supplying the required amount of air in the mine. On entering the mine, the air current should be divided into two or more splits and distributed so as to give to each district or section of the mine a volume of air sufficient for its needs. Each air split should be made to sweep the working faces in such volume and velocity as to dilute, render harmless and carry away the gases that would otherwise accumulate in those places. Wherever necessary, brattices must be erected to conduct the air to the working face. All stoppings, doors and air bridges must be made tight to prevent the leakage of air through them.

QUESTION—State in detail how you would conserve materials and supplies in and about a coal mine.

ANSWER—In the first place, all supplies and material of every nature should be properly stored and accounted for. Each should be in charge

of a reliable person and no material or supplies should be given out to men, except on the order of the mine foreman or an authorized assistant. All material and supplies should be inventoried as received and an account of stock should be taken each year to check the amount on hand. Again, the mine foreman and his assistant should see to it that no rails, track ties, timber and other material are thrown aside and left to be covered up in the waste. All such material should be gathered up and properly stored when not required for immediate use. When places are to be abandoned, the foreman and his assistant should see that all tracking and available timber are removed and sent to places where they can be used to advantage.

QUESTION—(a) In an airway 14 x 6 ft., there is passing 63,000 cu.ft. of air per minute; what is the velocity of the air current per second? (b) This airway is 6,500 ft. long; what is the rubbing surface?

ANSWER—(a) The sectional area of this airway is $6 \times 14 = 84$ sq.ft. The quantity of air passing is, therefore, $63,000 \div 60 = 1,050$ cu.ft. per sec.; and the velocity of the current is $1,050 \div 84 = 12 \frac{1}{2}$ ft. per sec.

(b) The perimeter of this airway is $2(6 + 14) = 40$ ft.; and the rubbing surface is, therefore, $40 \times 6,500 = 260,000$ sq.ft.

QUESTION—What is the weight, in tons, of the air constituting the ventilating currents in a mine when their combined volumes are equal to 2,240,000 cu.ft., assuming the temperature inside to be 62 deg. F.?

ANSWER—The weight of a cubic foot of air, at this temperature and a barometric pressure of, say 30 in. is

$$w = \frac{1.3273 \times 30}{460 + 62} = 0.07628 \text{ lb.}$$

The total weight of air in the mine is, therefore, $(2,240,000 \times 0.07628) \div 2,000 = 85.43 +$ tons.

QUESTION—If the volume of air proves insufficient when the fan is running at its full capacity, what would you do, under such circumstances, to improve the ventilation?

ANSWER—First, clean up the airways, enlarge breakthroughs, straighten the air-courses, shorten the distance of air travel wherever practicable and repair all leaky doors and stoppings. When this is done, examine carefully to see if the air current cannot be split, at certain points, whereby the ventilation will be improved at the working faces. It is important to remove every obstruction to the free flow of air.

QUESTION—Find the mine resistance when the water gage reads 2.5 in., in an airway 5 x 12 ft. in cross-section.

ANSWER—A water gage reading of 2.5 in. corresponds to a pressure of $5.2 \times 2.5 = 13$ lb. per sq.ft. Since the mine resistance is equal to the total pressure producing the circulation in an airway, and the sectional area, in this case, is $5 \times 12 = 60$ sq.ft., the total pressure in this airway, or the mine resistance, is $60 \times 13 = 780$ lb.

Kennedy Predicts Coal Famine in New York; Learoyd Says Danger is Past

At a joint meeting of the Women's City Club and the City Club of New York held in the Town Hall, New York City, Nov. 27, Thomas Kennedy, chief of District No. 1, United Mine Workers of America, declared that New York City will be facing a coal famine after the first big sleet or snow storm.

Mr. Kennedy said he had just returned from an inspection of the mines and that a famine may occur. "The railroad strike has tied up the coal cars, notwithstanding all reports to the contrary," Mr. Kennedy declared. "The railroads are not able to haul the coal from the anthracite region, and with the first big sleet or snow storm New York City will be facing a coal famine."

Arthur S. Learoyd, Assistant State Fuel Administrator, had declared previously that, barring a catastrophe, New York City would be able to pull through without a shortage. There is no shortage now, he said, but the coal received is of poor quality. He said he looked for the supply to increase from now on, because the transportation situation has improved and coal arriving at this port cannot be shipped to distant points in winter.

Mr. Learoyd outlined the activities of the State Fuel Administration to control an equitable distribution of coal and eliminate profiteering. He said that the State Fuel Administrator had no control over mine prices, which were the basic source of the cost of coal to the consumer.

Mr. Learoyd said that under the direction of the State Fuel Administrator an auditing firm has examined the books of twenty dealers in New York and as a result of their examination had discovered only two cases in which a question regarding the fairness of prices arose. These questions, he said, involved only 50c. of the price and were based on varying opinions as to the propriety of the amount.

Senator Borah of Idaho, who was to have been the principal speaker, was unable to attend. He telegraphed Miss Mary Garrett Hay, president of the Women's Club, who presided.

Daniel T. Pierce, chairman of the general policies committee of the anthracite operators, also addressed the meeting. An abstract of his address appeared in *Coal Age* last week.

Pennsylvania About to Collect Tax on Hard Coal and \$200,000 in Penalties

Following receipt at Harrisburg, Pa., of information that the U. S. Supreme Court had sustained the Pennsylvania Supreme Court, which had held that the 1921 anthracite coal tax law is constitutional, it was announced by Samuel S. Lewis, Auditor General, that he would proceed at once to collect the coal tax due the commonwealth as the result of settlements effected after the companies had filed their first reports during January and February of this year. These reports covered the period from the effective date of the tax law, in July, 1921, to the close of the calendar year of 1921. The amount of tax due for that period was \$3,273,840.61. Of this total but \$8,288.58 has been paid to the state; having been received from various small coal operators.

A penalty of 1 per cent a month will be collected from those companies which refused to pay the tax pending the appeal. The penalty is collectable sixty days after the date of the Auditor General's settlement, and it is estimated that on the average the companies are six months in arrears and that the total penalty will be between \$196,000 and \$200,000.

The tax on this year's anthracite production cannot be collected prior to May 1, next, the Auditor General believes. The reports on the production of the anthracite mines during the present calendar year are not due in Harrisburg before Feb. 1, 1923. If the companies desire a longer period in which to file they can obtain fifteen days additional by making application in writing. Settlements cannot be made until after the reports are checked up and then the com-

panies have sixty days in which to make payment before the 1 per cent a month penalty becomes effective. It is estimated that the tax will amount to between \$6,500,000 and \$7,000,000 a year in normal years.

Deputy Attorney General Hull has announced that he will ask the Dauphin County Court to enter judgment against the seventy anthracite companies which have appeal cases pending at Harrisburg. These companies made a stipulation in filing their cases that in the event of the U. S. Supreme Court upholding the State Supreme Court and the lower court on the question of constitutionality, judgment would be entered and no further appeal would be taken.

This action will leave but a few cases which may be appealed from the Dauphin County Court. The cases of the Philadelphia & Reading Coal & Iron Co., involving over \$500,000 in taxes, and of the Mill Creek Coal Co., involving a small sum, decided in the Dauphin County Court a week ago, related to questions relative to the assessment and method of assessment of the tax and other matters not allied with the main issue in the U. S. Supreme Court case. The Philadelphia & Reading company, it is said, may take an appeal from the Harrisburg decision which held the act constitutional, the opinion following the same general lines of that in the original case.

Several other cases, involving the right to tax coal used in production at the mines, the taxing of briquets and of river coal, are yet to be decided by the Dauphin County Court.

A tax of 12.2c. a ton on domestic anthracite coal will result from the tonnage tax, according to a computation made by the General Committee of Anthracite Operators.

"Based on the value of anthracite production in 1921, \$442,924,084, this tax would amount to \$6,643,861," says a statement of the operators.

Two companies shipping to Philadelphia have increased the prices of broken and egg coal 15c. to 20c. per ton and on other domestic sizes 10c.

Navy Asks Bids for Coal Needs Till June 30 For Ships and Philadelphia Navy Yard

Bids on coal needed by ships and the Navy Yard at Philadelphia, Pa., during the remainder of the fiscal year, which ends June 30, 1923, are asked by the U. S. Navy Department. The coal must be best quality steaming bituminous or semibituminous run-of-mine, with at least 40 per cent lump, suitable and acceptable for the uses of the naval service and must be furnished from mines on the Navy Acceptable List. Coal must be reasonably dry and practically free from slate, dirt, sulphur and other foreign substances, subject to the usual inspection and test, and must weight 2,240 lb. per ton.

Tenders for ships' use are divided into three classes. Class 1 is for 15,000 tons, to be delivered in New York Harbor between Dec. 15, 1922, and June 30, 1923. Class 2 is for 4,000, to be delivered monthly at Philadelphia—during January, 1,000 tons; February, 1,500 tons, and March, 1,500 tons. Class 3 provides for 200,000 tons, delivery to be made at Hampton Roads, Va., between Dec. 15, 1922, and June 30, 1923.

For the Philadelphia Navy Yard 18,000 tons in mine-run is needed between Dec. 15 and Jan. 31; 28,500 tons between Dec. 15 and March 31 and 36,000 tons between Dec. 15 and June 30.

AFFAIRS IN THE CONNELLSVILLE COKE REGION show slight change, a few more men drifting back to work right along and the output increasing, the shortage of cars being quite a deterrent. The holiday last week curtailed output quite a little. The first dynamiting of any consequence for some time occurred early Sunday morning, Nov. 26, when a double house at the Republic plant of the Republic Iron & Steel Co. was literally blown to pieces and two men badly hurt, who are now in the Brownsville hospital. Two other men, a woman and several children received lesser injuries. The Brier Hill Coke Co. has suspended operations indefinitely in order to install some new equipment.

Illinois Mining Institute Wrestles with Mine Power Problems; 72 New Members

What is the cost of a ton of coal fired under a coal mine's boilers? Can the mines of the country standardize an equitable method of computing this cost? In what sort of unit should mine power be measured? How should power costs be distributed between the points of consumption? Fifty interested members of the Illinois Mining Institute, in their two-day winter meeting at the University of Illinois, struggled with these related questions on Friday and Saturday, Dec. 1 and 2, and went back to the mining fields of the state with some new ideas to think over.

The discussion was provoked by a paper read by A. J. Hoskin, research assistant professor of mining engineering at the university, who has been making an exhaustive study of the whole question of mine power under the co-operative agreement between the university, the state and the U. S. Bureau of Mines, and who, having encountered all sorts of obstacles which he knew in advance he was going to meet, laid the problems before the Institute and asked for suggestions, just as he is laying the same problems before the whole coal-mining industry of Illinois with the same suggestion. In addition, at the meeting the Institute heard a discussion by Harold E. Culver, who also is working under the co-operative agreement. Mr. Culver is trying to work out some method of infallibly identifying every coal deposit in the state, his research thus far leading him to suspect that the "well known" coal measures of the region may not be so well known after all, in fact they may be much confused in mining men's minds. J. C. Quade described, with the aid of a projecting lantern, the new No. 4 Mine of Big Creek Coals, Inc., the company of which he is chief engineer. All this took place Dec. 1 in the student union building at the university.

That night the Institute banqueted, with John G. Millhouse presiding and with "speaking" by William Hall, Thomas Back, J. E. Myers (who is a member of the miners' union), F. F. Jorgenson and Martin Bolt. The well-known mining "movie," "The Story of Coal," was shown. The next morning the Institute members visited the university laboratories and experiment station, where they saw new ideas in coal washing demonstrated and where they got first-hand information about the new Wallin stage for measuring air pressures, a mechanism which was developed at the university and whose application to mine ventilation is being made by the mining department.

Before the Institute adjourned that afternoon it had decided that it should take a boat trip next summer, leaving the date and course to be charted by the Institute's executive committee. It received 72 new members and elected the following officers: President, John G. Millhouse, of Litchfield, mine inspector for District 6; First Vice-President, D. D. Wilcox, of Gillespie, general superintendent for the Superior Coal Co.; Second Vice-President, Harvey E. Smith, of Springfield; Executive Committee, George Larimore, E. G. Lewis, William Hall, William Kidd and Prof. H. H. Stoeck, retiring president of the Institute and professor of mining engineering at the university. Martin Bolt, assistant director of the State Department of Mines and Minerals, who has long served the Institute as secretary-treasurer, was continued in office.

Midwest Waterway May Be Built

There is much agitation in Mississippi River towns as well as in the southern Illinois coal fields over the prospect of Governor Small of Illinois assuming authority granted him to issue \$20,000,000 in bonds for the construction of the Illinois section of the proposed deep waterway from Lake Michigan to the Gulf via the Illinois River and the Mississippi River.

There is a further appropriation of \$10,000,000 to be voted on in December for the same purpose. This is indicated to be a forerunner of the opening up of a waterway in the Big Muddy River from the Mississippi through the coal fields of Jackson, Williamson and Franklin counties.

This will almost eliminate all-rail coal from these fields

to all points on the Mississippi River from New Orleans up to Dubuque or farther north. The West Kentucky Coal Co., of Paducah, had arrangements partly completed in September for barging retail and steam coal to St. Louis, where dock and yard sites were located. Other receiving points were to have been Cape Girardeau, Cairo, Crystal City, East St. Louis, Alton, Wood River and Hannibal. The low stage in the river channel caused abandonment of the project at that time.

Freedom for Howat Unlikely, Though New Officials Oppose Industrial Court

Recent affirmation by the Kansas State Supreme Court of the Cherokee County sentence of August Dorchy, deposed vice president of district 14, United Mine Workers, ends for the time all talk of Alexander Howat, deposed president of district 14, and the other agitators who went to jail with him early this year, being freed. Subsequently, the Supreme Court overruled an application by Dorchy's lawyers for a rehearing, but allowed a writ of error, which will permit the case to be taken to the U. S. Supreme Court. Howat's appeal was handled in a similar manner some time ago, and the United States court decided it had no jurisdiction.

Howat and Dorchy both are now in the Crawford County jail at Girard, Kan., serving sentences of one year each for calling a strike in the Crawford and Cherokee county mines of the Mackie company in violation of an injunction by Andrew J. Curran, judge of division No. 1, of the Crawford County District Court. They already have served four months of six months' sentences in the Cherokee County jail at Columbus, Kan., for violation of the Industrial Court law in connection with the same strike. At the end of the four months they were released pending an appeal. It was while at liberty by reason of their appeal that they were arrested in Crawford County and began serving the sentences which will expire next April. The denial of Dorchy's appeal, following the Supreme Court's act of some months ago in denying Howat's, will send the two men to the Cherokee County jail upon their release from the Crawford County jail, to serve the remaining two months of their six months' sentences.

Howat's and Dorchy's penal history is further complicated by indeterminate sentences by Judge Curran for contempt of court. These are to be served in the Crawford County jail until such time as the two men shall consent to testify before the Kansas Court of Industrial Relations. Unless something intervenes to prevent, they will begin when Howat and Dorchy are released from the Cherokee County jail.

Since the November elections a new movement has developed among labor organizations in Kansas for the release of Howat.

"Labor organizations seem to interpret the election of Jonathan Davis as meaning that Mr. Howat should be let out of jail," Governor Henry Allen said. "I have received numerous requests in the last few days asking that I release Howat. I have no intention of doing so. Howat was placed in jail after repeated violations of the Kansas Industrial Court law, for contempt of court. It is within the provisions of the Legislature to repeal this law if it sees fit. The fact remains that Howat was found guilty of violating a state law, and as far as I am concerned he must remain in jail."

Howat sympathizers received no greater comfort from Judge Curran when they approached him a few weeks ago with a petition for the release of Howat and his fellow prisoners on parole. Judge Curran was defeated at the elections in November, and both Jonathan Davis, Democrat, who will succeed Governor Allen, and Daniel H. Wooley, Republican, who will succeed Judge Curran, are avowedly opposed to the Industrial Court law. It is not considered likely that Governor-elect Davis, pitted against a Republican Legislature, will be able greatly to change present conditions. He will, however, have the power of parole, as also will Judge-elect Wooley.

Coal Commission Seeks Constructive Remedy for Future Rather Than Placing of Blame for Abuses in Past

BY PAUL WOOTON

Washington Correspondent of *Coal Age*

The chimney at the President's Coal Commission is beginning to draw. The staff is practically complete and its members are getting in step, so that everything will be ready shortly to apply forced draft, which must be used if the preliminary report which must be presented by Jan. 15 is to be of moment.

The point has been reached where the interest of the public and of the industry is beginning to turn to what is to be said in the Jan. 15 report. The anthracite operators evidently expect the commission to say in a concrete way what is a fair and a just wage. It will be recalled that the anthracite operators withdrew their demand for arbitration only when they obtained from Senator Pepper the assurance that a commission would be appointed to determine, among other things, the amount of the wage thought to be reasonable and equitable to all concerned.

There is no disposition on the part of any branch of the industry to expect a complete report on Jan. 15. There is a disposition to avoid pressing the commission now, as it is fully expected that the commission will express itself rather fully on that date and at least will foreshadow the scope of the final report.

The retailers made an exhaustive report to the commission. While much of the material presented hardly is pertinent to what the commission had in mind when it called for suggestions, no effort was made to play to the galleries.

The conference with the transportation representatives revealed the great importance which the commission is attaching to the part transportation plays in the coal business. It already is apparent that the commission is set on

working out a constructive remedy for the future rather than trying to determine who may have profited in the past. It is equally plain that industry is going to co-operate fully in efforts to suggest economies in the production and distribution of coal, whether or not the same measure of help is given in developing facts with regard to wages, profits and cost of living.

The commission is being helped materially by the fact that the Interstate Commerce Commission is dealing at this time with certain fundamentals of coal traffic. At the same time the Interstate Commerce Commission undoubtedly will benefit by the studies being made by the Coal Commission because the ultimate decision on assigned cars and as to mine ratings can be intelligently made only in the light of the whole business of fuelling the country. The evidence being brought out at the Interstate Commerce Commission hearing could not have come at a more fortunate time for the Coal Commission. The information being developed fits into the needs of the Coal Commission so well that the Interstate Commerce Commission, in effect, is acting as a sub-committee to the Coal Commission. The value of the material is enhanced by the fact that the Commerce Commission is taking into consideration the disruptive influence on labor exerted by assigned cars. This is something of a departure for the Interstate Commerce Commission, since it has usually insisted on confining its inquiries to transportation aspects only. For instance, the Commerce Commission was unwilling to use its powers to prevent export of coal during the emergency, on the ground that it would be using these powers for an ulterior end.

Western Pennsylvania Operators Organize To Assist Commission Probe

Western Pennsylvania coal operators have perfected an organization to map out plans to assist the United States Coal Commission in its investigation of the industry. They held a meeting for the purpose in the William Penn Hotel, Pittsburgh, Pa., Nov. 28. Samuel A. Taylor was chosen chairman and Richard W. Gardiner secretary.

A committee of five was appointed to represent the various interests at the gathering. C. W. Gibbs was chosen to represent the Freeport Thick Vein Association and M. D. Kirk the Pittsburgh Coal Producers' Association. The independent operators will choose a member and the non-commercial operators a member, and a fifth is still to be chosen. An annual output of about 30,000,000 tons of bituminous coal was represented. The committee to be chosen will co-operate with the bituminous operators' special committee under the auspices of the National Coal Association.

J. B. L. Hornberger, vice-president and comptroller, announced the withdrawal of the Pittsburgh Coal Co. Mr. Hornberger said, however, his corporation was in hearty accord with the plans of the conferees and the work of the national organization of the industry as represented by their bituminous operators' special committee.

Operators will be assessed 4 mills per ton of production for the period from October, 1922, to April, 1923, to pay the legal and other expenses incident to the work. John W. Davis, former solicitor general of the United States, has already been retained as advisory counsel for the national committee. Another of equal ability will probably be employed, it was stated.

These were among the delegates to the conference: A. P. Cameron, Westmoreland Coal Co.; K. P. Lewis, Somerset Coal Operators' Association; George H. Theiss, Duquesne

Coal Co.; W. W. Keefe, Export Coal Co.; John Jenkins, Oliver & Snyder Steel Co.; J. G. Farquhar, Virginia Coal Co.; F. C. Neale, Kittanning Iron & Steel Co.; A. R. Pollock, Ford Collieries Co.; George H. Morse, Republic Iron & Steel Co.; J. D. Durg, Chartiers Creek Coal Co.; C. W. Gibbs, Harwick Coal Co.; Thomas F. Fear, Inland Collieries Co.; James and J. G. Patterson, Youghioghenny & Ohio Coal Co.; A. H. Stolzenbach, Diamond Coal & Coke Co., and J. L. Lowther, National Mining Co., a subsidiary of the United States Steel Corporation.

Mining Congress to Assist Coal Commission

The American Mining Congress has appointed a committee to co-operate with the President's Coal Commission. The committee is composed of the following: S. A. Taylor, Carl Scholz, J. H. Allport, R. V. Norris, Cyrus Garnsey, Howard Eavenson and W. H. Cunningham.

Railroads Pledge Co-operation with President's Coal Commission

Any assistance within the scope of the American Railroad Association will be rendered the President's Coal Commission, a large committee of transportation men representing that organization told the commission on Nov. 28. The conference was preliminary in character and no formal plan for co-operation was submitted. There was a general discussion of the problems of coal distribution. The transportation men who participated in this conference were R. H. Aishton, president, American Railroad Association; Judge R. V. Fletcher, Illinois Central; Elisha Lee, Pennsylvania R.R.; D. D. Conn, American Railroad Association; M. J. Gormley, American Railroad Association; W. A. Northcutt, Louisville & Nashville; C. M. Sheaffe, New York,

New Haven & Hartford; F. L. Blendinger, Lehigh Valley; B. B. Greer, Chicago, Milwaukee & St. Paul; W. K. Seaton, Pere Marquette; C. R. Moore, Grand Trunk; M. R. McFarlane, Chicago, Burlington & Quincy; W. S. Bronson, Chesapeake & Ohio, and Dr. J. H. Parmelee, Bureau of Railway Economics.

Shortage of Domestic Sizes of Anthracite Will Be 40 Per Cent, Says Spens

After a survey of the present coal situation in Pennsylvania, New Jersey and New York, it is apparent that, although there is sufficient coal in the United States, there is a definite and continuing shortage of domestic sizes of anthracite, according to Federal Fuel Distributor C. E. Spens. It will not be humanly possible to make up during this winter the shortage in these sizes, which will amount to approximately 40 per cent, states Mr. Spens.

The available sizes of domestic, as well as those of all other anthracite sizes, have been allocated to the various states in proportion to their normal consumption, and every effort is being made for equitable distribution along this line. Should one state seize any of the coal allocated to any of the neighboring states, the latter will be short just so much coal, and the effect might be far-reaching, the Federal Fuel Distributor points out. In other words, the burden is general, and attempts at taking the law into one's own hands will only tend toward chaos and shortage all around.

The answer to all of this is for every consumer to provide himself with a sufficient amount of such substitutes as steam sizes of anthracite, bituminous coal, coke and wood, Mr. Spens declares. There is an ample supply of steam sizes. It is a comparatively simple matter for people to learn how to supplement domestic sizes of anthracite with the smaller sizes, and there is no restriction on the amount that can be purchased and stored.

Watkins and Posten Prove Interesting Witnesses at Assigned-Car Hearing

Rather than interfere with the orderly development of the mines of his company, Thomas H. Watkins, testifying in the assigned-car case, told the Interstate Commerce Commission that he recently had purchased one thousand coal cars. The use of these private cars means a direct loss of \$75,000 a year; nevertheless, Mr. Watkins said, it is profitable to use them because it decreases the losses occasioned by inability of the railroad companies to furnish cars regularly. Mr. Watkins has been one of the outstanding opponents of the assigned-car practice for many years. His recommendations on this subject were regarded of sufficient importance by the bituminous coal commission of 1920 to embody them, as a whole, in its report to the President.

E. M. Posten, president of the New York Coal Co. and of the Interstate Coal & Dock Co., evidently impressed the commission with his contention that the assigning of cars adds no less than \$1 per ton to the cost of all coal—that used for railroad fuel and for all other purposes—because the disturbing effect of assigned cars on labor is one of the principal reasons why mine workers have to be paid a high daily wage. He pointed out that only 15 per cent of the mine workers are employed in the properties which supply the railroads with coal. The remaining 85 per cent of the mine workers are engaged in producing the output going to other consumers. It is this 85 per cent which insists on a high daily wage to tide them over the idle time, much of which is caused by lack of cars.

The men in the mines furnishing railroad fuel, Mr. Posten said, have an annual wage entirely out of proportion to the annual earnings of men in other coal mines and out of proportion to the wage in other industries. This is a potent cause of dissatisfaction among railroad workers, especially those whose positions require training and skill. They are tempted constantly to demand higher wages by the fact that they see much lower grade labor paid more than they themselves receive.

In answer to questions from the bench, Mr. Posten explained why there is a surplus of coal-mine labor. One of the principal reasons, he said, grows out of the frequent periods of car shortage. During these periods the price of coal goes up to a point where a large number of small mines can be brought into operation. So as to take full advantage of the short time they will have to operate, they offer labor more than the regular scale. He cited this example: A blacksmith who is receiving \$8 a day at a well-equipped mine is offered \$10 by one of the mines expecting to operate only during the period of high prices. As a result the well-equipped mine has to break in another blacksmith. As prices fall the smaller mine closes up and its blacksmith is looking for a job. This example, when applied to thousands of workers, was held by Mr. Posten as being one of the main causes for the surplus of mine labor.

In addition Mr. Posten made a plea for the storage of coal by all large consumers. He declared it would be profitable to the consumers and would do much to stabilize the coal industry. He cited the practice of the Standard Oil Co. and other concerns which operate plants where great losses would entail were they forced to close, who store coal successfully. Had the railroads stored all the coal they could in 1921, he said, it would have resulted in large savings to them and might have averted the strike.

Mr. Posten told Commissioner Aitchison frankly that the service orders of the commission are frequently disregarded. When coal mines were supposed to have first call for open-shop equipment, other commodities were using these cars in greater proportion than coal, he said. Some of the divisions of the New York Central lines, he said, had 100 per cent car supply when others had only 20 per cent of the cars necessary to take care of the tonnage the mines had to offer.

Dr. Smith, Governor Marshall and Judge Alschuler, of the President's Coal Commission, have attended some of the sessions of the hearing and have interrogated witnesses.

Ohio Fuel Administration Disbands; Emergency Considered Past

On Dec. 1 the Ohio Fuel Administration ceased to function. The administration was called into being as an emergency and had been functioning slightly more than one month. It was disbanded upon the recommendation of C. J. Neal, Administrator, and Governor Harry L. Davis on the ground that the emergency which created it had passed and that the matter of fair price and adequacy of supply had been established. The administration spent about \$15,000 out of the total appropriation of \$1,045,967.

In disbanding the administration machinery Governor Davis commended the personnel of the office for their efficient work, stating that the people of Ohio had been saved more than one million dollars by the functioning of the administrator and his staff.

Attention is called to the fact that the law creating the administrator is in force still and if another emergency occurs another administrator can be named and will be able to start work at once.

Illinois Chamber of Commerce Avoids Union Trap Regarding Herrin Prosecution Fund

"It's none of your business" is the substance if not the words of the Illinois Chamber of Commerce in replying Nov. 28 to the demand of the United Mine Workers for a statement as to how the money is being spent which the chamber has raised for the prosecution of the Herrin massacre case. The union, exerting every effort to make it appear that the prosecution of the men charged with slaughter of non-union miners at Herrin, June 22, is nothing more or less than an attack on unionism, wrote a letter to the chamber asking seven carefully phrased questions about the defense fund. While this letter was dated Nov. 14 and appeared in newspapers throughout the state Nov. 17 and Nov. 18, it did not reach the chamber in Chicago until Nov. 21.

Agreement with Miners at Chicago on Wage-Making Plan for Country Seems Unlikely

Chicago, Ill., Dec. 5.—On the eve of the second joint conference of miners and operators at Chicago, Wednesday, Dec. 6, it was evident that no agreement with miners on a new wage-making system for the country was likely. After two days of preliminary sessions the operators were ready to propose on Wednesday to the miners that district agreements be made to replace the present plan, which expires April 1.

It was almost certain that President Lewis and his miners would refuse such a plan and the indications were that nothing else would be offered by the operators. In such a case Lewis would call the Jan. 3 wage conference on the assumption that the old four-state Central Competitive Field remains in existence until supplanted. Nobody guesses what would be the result of that.

The operators' advance meeting started Monday but did not make any definite decisions because Delegate Michael Gallagher, of Ohio, and the three men from Indiana, including Phil Penna, chairman of the joint conference, did not arrive until Tuesday. The Indiana men were delayed

by a difficulty arising out of a check-off dispute. By Monday night it seemed evident that no decision could be made upon proposing to re-establish the four-state plan, which is so favorably regarded by the union. Many regions were for district agreements or nothing, feeling that some new element may be injected into the situation before January and that the four-state plan needs federal approval before it is adopted again. The bulk of sentiment was for proposing district agreements, no matter what the outcome.

On Tuesday, when the last delegates got in, this sentiment did not materially change and the battle of the outlying districts for the creation of a national policy committee got nowhere, though it was fought hard. At noon a committee was named to draft a resolution proposing that a district plan be adopted together with provision for arbitration in case of dispute and with a flexible scale to allow regions such as central Pennsylvania to fairly meet non-union competition. On this committee were both friends and foes of this plan, which everybody knew would be refused by the union as soon as they got a chance at it.

Tidewater Exchange Members Invited to Join Plea for Cut in Demurrage

Charles A. Owen, Edward Adams and James E. Manter, receivers of the Tidewater Coal Exchange, Inc., in dissolution, have sent a letter to members of the exchange inviting them to become partners to its case in presenting to the Interstate Commerce Commission a petition seeking to reduce the demurrage charges collected on coal at New York, Philadelphia and Baltimore during the two years preceding the filing of complaint, on Nov. 6, 1922, the period during which the commission has authority to order refunds.

The receivers state that they are primarily interested in this matter only so far as it concerns members of the incorporated exchange. At the same time, as they are satisfied that there is more than a fair chance to have refunded a substantial portion of these demurrage charges, which appear to have been illegally assessed, they feel that all members of the trade should be given an opportunity to join with the exchange in this matter.

Spens to Remain Until Jan. 1.

Urged by President Harding, C. E. Spens will continue as U. S. Fuel Distributor until Jan. 1. By that time, the President believes, it will be possible to declare the coal emergency at an end and suspend enforcement of the fuel distribution act.

At the expiration of his sixty days' leave of absence from the Chicago, Burlington & Quincy R.R. Mr. Spens held a conference with the President relative to his future plans. Mr. Spens is reported to have believed that the emergency had been sufficiently relieved to make it unnecessary for him to remain any longer. In compliance with the President's wishes, however, he agreed to remain.

Illinois Miner Draws \$301 in a Single Pay, Averaging \$2.69 an Hour

Laurels for high, wide and handsome pay drawing might descend upon E. Friese, a miner employed in the new Zeigler No. 2 mine at Zeigler, Ill., operated by the Bell & Zoller Mining Co. Friese won attention the first two weeks in October by earning \$301.29, which netted him \$276.24 after various deductions had been made. The deductions were \$4.71 for supplies, \$14 for powder and union check-off, and special dues totaling \$6.34. Computing his pay by the hour, this man can be credited with earning at the rate of \$2.69 per hour.

Woodin Asks Aid to Curb Gougers

With improved prospects for larger coal deliveries, William H. Woodin, State Fuel Administrator for New York, Dec. 4 took steps to curb profiteering in the prices of steam sizes of anthracite coal, which he has recommended to householders as a suitable substitute for domestic sizes.

After a conference with a committee of anthracite operators Mr. Woodin sent a letter to Mayor Hylan of New York City stating that the mine owners had agreed to give emergency aid to parts of Brooklyn, and this relief probably would become effective within forty-eight hours. Similar aid for other sections of the city suffering from inadequate fuel supplies, it was explained, may be given if the situation requires.

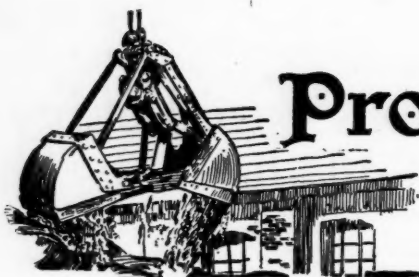
Announcement that several railroads had stopped coal deliveries to the Northwest via the Great Lakes was construed by coal dealers to mean that additional shipments probably would be turned into New York and other Eastern districts.

While he could not authorize a maximum price for domestic sizes, such as nut, grate and egg coal, because the mine prices of such coal varied, Mr. Woodin said he wanted information from persons who believed that they had been charged too much for coal, particularly the steam sizes. He said that buckwheat sizes should range from \$8.20 to \$10.50 a ton.

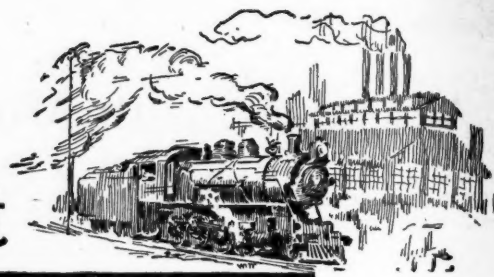
Short-Circuit in Powder Keg in Cherokee Mine Blast Traced to Carelessness

Carelessness in transporting powder within the mine was the cause of the explosion, Nov. 25, in Hamilton mine No. 6, near Cherokee, Kan., operated by the Cherokee Coal Co. under lease, according to a report by James Sherwood, Kansas state mine inspector. Thirteen men were severely burned in the accident, which followed the contact of a 25-lb. keg of powder with the positive post of the battery and the metal frame of the motor of the car in which the powder was being hauled. A short-circuit was caused, which ignited the powder.

Mr. Sherwood declared he warned George Fulton, mine foreman, the week before the accident, against carrying exposed powder kegs on the motor. The Kansas mining law requires that all powder hauled by electric motor shall be protected by an insulated box. The steel cover of the motor which was carrying the powder at the time of the explosion had been torn off, and the insulation plate of wood fiber beneath it had been broken to such an extent that the terminals of the battery were exposed.



Production and the Market



Weekly Review

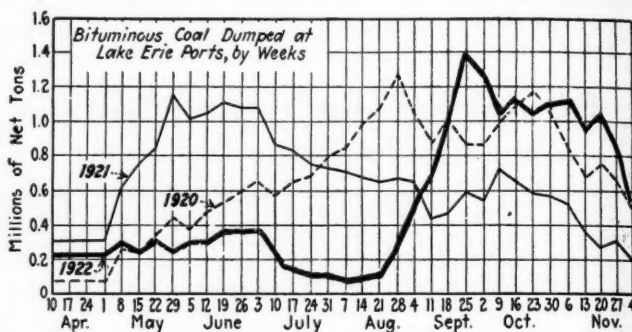
Cold weather has injected more life into the domestic bituminous-coal market but has failed to stimulate the call for industrial fuels for the country as a whole. Steam prices continued to slump last week, more than overtopping the strength in domestic fuels. *Coal Age* Index of spot bituminous coal prices dropped to 326 on Dec. 4, as compared with 330 on Nov. 27. The average mine price stood at \$3.95, a drop of 4c. from the previous week.

STRONGEST MARKETS IN EASTERN SECTIONS

Eastern sections present the strongest market today both for industrial and prepared coals for home consumption. Good steam grades are increasingly difficult to obtain and this distinct evidence of a growing scarcity has enhanced the values of medium and low qualities. Transportation conditions make deliveries difficult and requests for tracers show how closely the consumer has been buying. Although buyers feel that the flurry is only temporary and will be relieved now that the Lake season has closed, the market is very sensitive, as evidenced by immediate price raises when demand increases even slightly.

Cessation of Lake shipments has had a depressing effect on Eastern Inland markets and the Cincinnati territory also has felt the softening tendency caused

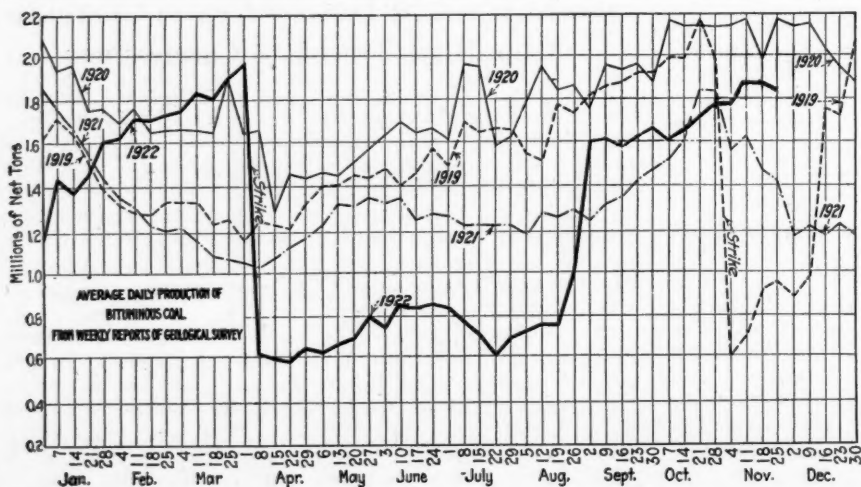
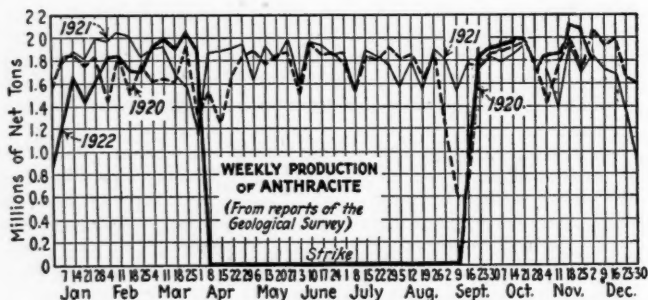
by the diversion to commercial channels of 1,000,000 tons per week of Lake coal. Consumers are not apprehensive over a coal shortage despite the warnings issued by the trade that transportation conditions undoubtedly will be inadequate when severe weather comes. With prices far from showing any stiffening, industrial users have no incentive to make forward commitments and demand is not commensurate with output. Domestic coal, on the other hand, is increasing in price and cold weather is steadily enlarging the market. Control of prices in Ohio was suspended Dec. 1, which has resulted



in a better movement of home-mined coal within that state.

Chicago and Midwest markets have experienced enough of a pick up in demand to hold prices firm. Domestic buyers are taking coal sparingly and steam users are still extremely cautious. Screenings are steadily stronger, however, evidently because large consumers are not so sure they can get the necessary tonnage so promptly at a later date. Kentucky fields—eastern and western—are in a price battle, with the latter taking more of the domestic business by selling at slashed figures.

The Northwestern market is full of soft coal. Steam demand is only fair but wintry weather has strength-



Estimates of Production

(Net Tons)

BITUMINOUS

	1921	1922
Nov. 11 (b).....	8,592,000	10,147,000
Nov. 18 (b).....	8,871,000	11,215,000
Nov. 25 (a).....	7,101,000	11,038,000
Daily average.....	1,184,000	1,840,000
Calendar year.....	370,181,000	354,990,000
Daily av. cal. year.....	1,335,000	1,275,000

ANTHRACITE

Nov. 11 (b).....	1,350,000	1,863,000
Nov. 18 (b).....	1,879,000	2,191,000
Nov. 25 (a).....	1,650,000	2,174,000
Calendar year.....	83,446,000	43,124,000

COKE

Nov. 18 (b).....	111,000	264,000
Nov. 25 (a).....	110,000	285,000
Calendar year.....	4,936,000	6,598,000

(a) Subject to revision. (b) Revised from last report.

The Pennsylvania state tax, having been upheld by the Supreme Court, has caused two companies to increase domestic prices 10c.@20c. at the mines. At this writing no price changes have been announced by the balance of the old-line producers, although the tax question is the subject of much comment in the trade. Independent quotations are higher, much of the coal moving at the increased prices recently authorized by the Pennsylvania fuel authorities.

"Bituminous coal production appears to have found a temporary level just above 11,000,000 tons per week," says the Geological Survey. "The total estimated output during the week ended Nov. 25, including coal coked, mine fuel and local sales, was 11,038,000 net tons. Preliminary reports of cars loaded during the first three days of last week (Nov. 27-Dec. 2) indicate that production continued at about the same rate, but on account of the Thanksgiving Day holiday the total output probably will drop to between 9,300,000 and 9,700,000 tons."

Year	October Production (Net Tons)	Cumulative Production to Oct. 31 (Net Tons)
1913.....	46,164,000	394,000,000
1914.....	37,685,000	353,000,000
1915.....	44,198,000	352,000,000
1916.....	44,807,000	413,000,000
1917.....	48,337,000	460,000,000
1918.....	52,300,000	495,000,000
1919.....	57,200,000	410,000,000
1920.....	53,278,000	463,000,000
1921.....	44,686,000	348,000,000
1922.....	45,173,000 <i>a</i>	316,000,000 <i>a</i>

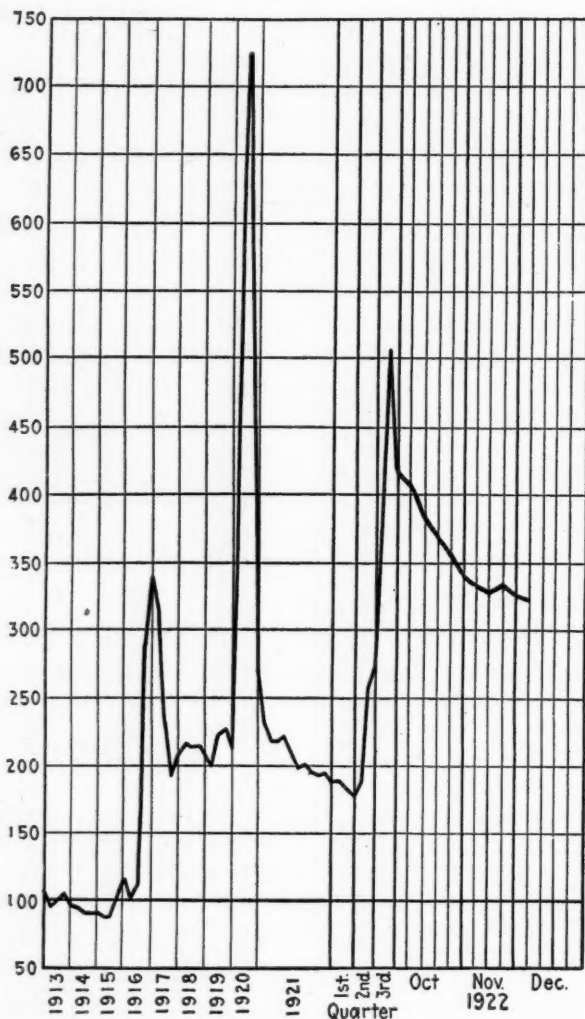
(a) Subject to revision.

Low-Volatile, Eastern		Market Quoted	Nov. 6 1922	Nov. 20 1922	Nov. 27 1922	Dec. 4 1922†
Smokeless lump.....	Columbus....	\$6.75	\$6.75	\$6.75	\$6.00@	\$7.00
Smokeless mine run.....	Columbus....	6.00	6.10	6.15	6.00@	6.35
Smokeless screenings.....	Columbus....	5.50	5.75	5.75	5.50@	6.00
Smokeless lump.....	Chicago.....	6.00	6.25	6.25	6.00@	6.50
Smokeless mine run.....	Chicago.....	5.60	5.60	5.60	5.50@	5.75
Smokeless lump.....	Cincinnati..	7.00	6.00	6.30	5.15@	8.00
Smokeless mine run.....	Cincinnati..	6.10	6.10	6.00	4.85@	6.00
Smokeless screenings.....	Cincinnati..	6.25	6.25	5.85	4.60@	6.00
*Smokeless mine run.....	Boston.....	6.85	8.00	8.00	7.25@	7.75
Clearfield mine run.....	Boston.....	3.50	3.85	3.60	3.25@	3.75
Cambria mine run.....	Boston.....	4.10	4.35	4.25	3.75@	4.75
Somerset mine run.....	Boston.....	3.60	4.10	3.85	3.50@	4.25
Pool 1 (Navy Standard)...	New York....	4.85	5.00	5.10	5.00@	5.50
Pool 1 (Navy Standard)...	Philadelphia.		4.75	4.75	5.00@	5.35
Pool 1 (Navy Standard)...	Baltimore....	4.50	4.60	4.85	4.50@	5.25
Pool 9 (Super. Low Vol.)...	New York....	4.10	4.25	4.50	4.50@	4.75
Pool 9 (Super. Low Vol.)...	Philadelphia.	4.30	4.45	4.50	4.50@	4.85
Pool 9 (Super. Low Vol.)...	Baltimore....	4.00	3.85	4.60	4.00@	4.25
Pool 10 (H.Gr.Low Vol.)...	New York....	3.50	3.60	3.85	3.75@	4.15
Pool 10 (H.Gr.Low Vol.)...	Philadelphia.	3.50	3.60	3.75	3.80@	4.15
Pool 10 (H.Gr.Low Vol.)...	Baltimore....	3.60	3.35	3.35	3.25@	3.40
Pool 11 (Low Vol.).....	New York....	3.00	3.05	3.25	2.75@	3.25
Pool 11 (Low Vol.).....	Philadelphia.	3.15	3.15	3.15	3.25@	3.50
Pool 11 (Low Vol.).....	Baltimore....	3.15	3.05	3.10	3.00@	3.25
High-Volatile, Eastern						
Pool 54-64 (Gas and St.)...	New York....	3.35	3.50	3.50	3.00@	3.50
Pool 54-64 (Gas and St.)...	Philadelphia.	3.50	3.50	3.50	3.35@	3.80
Pool 54-64 (Gas and St.)...	Baltimore....	3.35	3.30	3.30	3.00@	3.25
Pittsburgh sc'd.....	Pittsburgh..	4.50	4.50	4.50	4.75@	5.00
Pittsburgh mine run (St.)...	Pittsburgh..	3.35	3.35	2.60	2.50@	2.75
Pittsburgh slack (Gas)...	Pittsburgh..	3.60	3.60	3.10	3.00@	3.50
Kanawha lump.....	Columbus....	6.25	5.75	5.75	5.50@	6.00
Kanawha mine run.....	Columbus....	4.50	3.60	3.35	3.25@	3.50
Kanawha screenings.....	Columbus....	4.10	3.35	3.25	3.00@	3.50
W. Va. lump.....	Cincinnati..	6.00	6.00	6.25	6.00@	6.50
W. Va. Gas mine run.....	Cincinnati..	4.35	4.00	3.60	3.25@	3.75
W. Va. Steam mine run.....	Cincinnati..	4.00	3.60	3.40	3.00@	3.35
W. Va. screenings.....	Cincinnati..	4.00	3.35	3.25	3.00	
Hocking lump.....	Columbus....	5.50	5.05	5.05	4.50@	5.61
Hocking mine run.....	Columbus....	3.60	3.50	3.25	2.75@	3.25
Hocking screenings.....	Columbus....	3.05	3.00	3.00	2.75@	3.00
Pitta. No. 8 lump.....	Cleveland....	3.81	4.15	4.10	4.25@	4.75
Midwest						
Franklin, Ill. lump.....	Chicago.....	5.35	5.25	5.00	4.50@	5.50
Franklin, Ill. mine run.....	Chicago.....	4.10	4.10	4.10	4.00@	4.25
Franklin, Ill. screenings.....	Chicago.....	2.60	2.60	2.50	2.00@	3.00
Central, Ill. lump.....	Chicago.....	4.70	4.50	4.25	4.00@	4.50
Central, Ill. mine run.....	Chicago.....	3.10	3.10	3.10	3.00@	3.25
Central, Ill. screenings.....	Chicago.....	1.85	1.80	1.65	1.60@	1.75
Ind. 4th Vein lump.....	Chicago.....	5.10	5.10	5.10	5.00@	5.25
Ind. 4th Vein mine run.....	Chicago.....	3.85	3.85	3.85	3.75@	4.00
Ind. 4th Vein screenings.....	Chicago.....	2.35	2.05	2.05	2.15@	2.40
Ind. 5th Vein lump.....	Chicago.....	4.75	4.75	4.75	4.50@	5.00
Ind. 5th Vein mine run.....	Chicago.....	3.60	3.60	3.60	3.50@	3.75
Ind. 5th Vein screenings.....	Chicago.....	2.10	1.85	1.85	1.90@	2.10
Standard lump.....	St. Louis....	4.00	3.75	4.00	4.00@	4.50
Standard mine run.....	St. Louis....	2.60	2.50	2.60	2.50@	2.75
Standard screenings.....	St. Louis....	1.40	1.35	1.35		

† Advances over previous week shown in **heavy type**, declines in *italics*

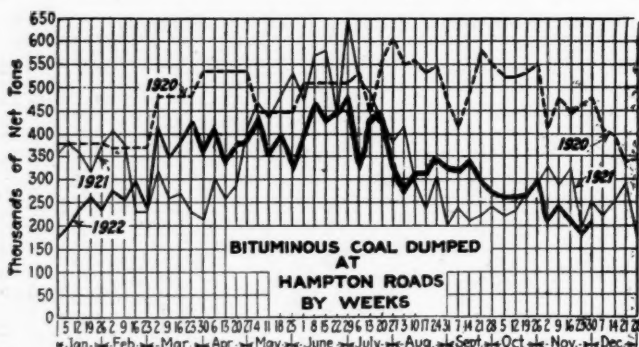
	Market Quoted	Freight Rates	Latest Pre-Strike		Nov. 27, 1922		Dec. 4, 1922†	
			Independent	Company	Independent	Company	Independent	Company
Broken.....	New York.....	\$2.34		\$7.60@ \$7.75	\$9.00	\$7.75@ \$8.15	\$9.00	\$7.75@ \$8.15
Broken.....	Philadelphia.....	2.39	\$7.00@ \$7.50	7.75@ 7.85		7.90@ 8.10		7.90@ 8.10
Egg.....	New York.....	2.34	7.60@ 7.75	7.60@ 7.75	9.25@ 10.75	7.75@ 8.15	9.25@ 10.75	8.00@ 8.25
Egg.....	Philadelphia.....	2.39	7.25@ 7.75	7.75	9.25@ 11.00	8.10@ 8.35	9.25@ 11.00	8.10@ 8.35
Egg.....	Chicago*.....	5.09	7.50	6.90@ 7.40	12.50@ 13.00	7.20@ 8.25	12.50@ 13.00	7.20@ 8.25
Stove.....	New York.....	2.34	7.90@ 8.20	7.90@ 8.10	9.25@ 10.75	8.00@ 8.35	9.25@ 10.75	8.00@ 8.35
Stove.....	Philadelphia.....	2.39	7.85@ 8.10	8.05@ 8.25	9.25@ 11.00	8.15@ 8.35	9.25@ 11.00	8.15@ 8.35
Stove.....	Chicago*.....	5.09	7.75	7.20@ 7.60	12.50@ 13.00	7.35@ 8.25	12.50@ 13.00	7.35@ 8.25
Chestnut.....	New York.....	2.34	7.90@ 8.20	7.90@ 8.10	9.25@ 10.75	8.00@ 8.35	9.25@ 10.75	8.00@ 8.35
Chestnut.....	Philadelphia.....	2.39	7.85@ 8.10	8.05@ 8.25	9.25@ 11.00	8.15@ 8.35	9.25@ 11.00	8.15@ 8.35
Chestnut.....	Chicago*.....	5.09	7.75	7.20@ 7.60	12.50@ 13.00	7.35@ 8.35	12.50@ 13.00	7.35@ 8.35
Range.....	New York.....	2.34				8.15		8.15
Pea.....	New York.....	2.22	5.00@ 5.75	4.75@ 6.45	7.00@ 10.00	6.15@ 6.20	7.00@ 10.00	6.15@ 6.30
Pea.....	Philadelphia.....	2.14	5.50@ 6.00	6.10@ 6.25	7.00@ 8.00	6.15@ 6.20	7.00@ 8.00	6.15@ 6.20
Pea.....	Chicago*.....	4.79	6.00	5.60@ 6.10	7.00@ 8.00	5.49@ 6.03	7.00@ 8.00	5.49@ 6.03
Buckwheat No. 1.....	New York.....	2.22	2.75@ 3.50	3.50	3.50@ 4.00	3.50@ 4.25	3.50@ 4.00	3.50@ 4.25
Buckwheat No. 1.....	Philadelphia.....	2.14	2.75@ 3.25	3.50	3.25@ 4.00	4.00	3.25@ 4.00	4.00
Rice.....	New York.....	2.22	2.00@ 2.50	2.50	1.50@ 2.75	2.50@ 3.00	2.00@ 2.75	2.50@ 3.00
Rice.....	Philadelphia.....	2.14	2.00@ 2.50	2.50	2.00@ 2.75	2.75@ 3.00	2.00@ 2.75	2.75@ 3.00
Barley.....	New York.....	2.22	1.50@ 1.85	1.50	0.50@ 1.50	1.50@ 2.00	1.00@ 1.75	1.50@ 2.00
Barley.....	Philadelphia.....	2.14	1.50@ 1.75	1.50	0.75@ 1.75	2.00	.75@ 1.75	2.00
Birdseye.....	New York.....	2.22		2.00@ 2.50		2.25		2.25

* Net tons, f.o.b. mines. † Advances over previous week shown in heavy type, declines in italics.



Coal Age Index 326, Week of Dec. 4, 1922. Average spot price for same period, \$3.95. This diagram shows the relative, not the actual prices on fourteen coals, representative of nearly 90 per cent of the bituminous output of the U. S. weighted in accordance first with respect to the proportions each of slack, prepared and run-of-mine normally shipped and second, with respect to the tonnage of each normally produced. The average thus obtained was compared with the average for the twelve months ended June, 1914, as 100, after the manner adopted in the report on "Prices of Coal and Coke, 1913-1918," published by the Geological Survey and the War Industries Board.

All-rail movement to New England declined during the week ended Nov. 25. Cars forwarded totaled 3,024 as compared with 3,289 in the preceding week. The improvement in that market predicted a short time ago has not materialized and from present indications not much buying is expected for the balance of the year. Prices on quality



coals from central Pennsylvania are firm, mainly because of the car shortage.

The Hampton Roads market is rather soft. Prices have failed to hold their recent advance despite the fact that

How the Coal Fields Are Working

Percentages of full-time operation of bituminous coal mines, by fields, as reported by the U. S. Geological Survey in Table V of the Weekly Report.

	Six Months July to Dec. 1921	Jan. 1 to Nov. 18, 1922 Inclusive	Sept. 5 to Nov. 18, 1922 Inclusive	Week Ended Nov. 18, 1922
U. S. Total.....	45.6	55.7	64.3	(a)
Alabama.....	63.5	64.6	84.3	(a)
Somerset County.....	55.5	74.9	36.9	35.4
Panhandle, W. Va.....	55.3	51.3	57.1	58.6
Westmoreland.....	54.9	58.8	69.2	75.8
Virginia.....	54.8	59.9	59.0	58.0
Harlan.....	53.3	54.8	20.2	19.1
Hazard.....	51.7	58.4	15.8	17.9
Pocahontas.....	49.8	60.0	36.4	30.3
Tug River.....	48.1	63.7	32.5	35.7
Logan.....	47.6	61.1	25.5	27.0
Cumberland-Piedmont.....	46.6	50.6	33.5	34.5
Winding Gulf.....	45.7	64.3	30.3	31.3
Kenova-Thacker.....	38.2	54.3	42.3	46.5
N. E. Kentucky.....	32.9	47.7	28.6	33.4
New River.....	24.3	37.9	31.3	30.4
Oklahoma.....	63.9	59.6	64.6	68.5
Iowa.....	57.4	78.4	74.3	58.5
Ohio, Eastern.....	52.6	46.6	43.1	44.0
Missouri.....	50.7	66.8	71.0	74.1
Illinois.....	44.8	54.5	49.6	51.4
Kansas.....	42.0	54.9	55.1	49.3
Indiana.....	41.4	53.8	37.7	(a)
Pittsburgh†.....	41.2	39.8	41.6	47.8
Central Pennsylvania.....	39.1	50.2	57.3	44.3
Fairmont.....	35.3	44.0	40.8	(a)
Western Kentucky.....	32.5	37.7	33.5	42.9
Pittsburgh*.....	30.4	31.9	55.7	78.1
Kanawha.....	26.0	13.0	14.9	14.4
Ohio, southern.....	22.9	24.3	38.5	41.4

* Rail and river mines combined.

† Rail mines.

(a) No report.

Car Loadings, Surplusages and Shortages

	Cars Loaded	
	All Cars	Coal Cars
Week ended Nov. 18, 1922.....	99,094	205,024
Previous week.....	953,909	188,312
Same week in 1921.....	790,363	168,438

	Surplus Cars		Car Shortage
	All Cars	Coal Cars	
Nov. 15, 1922.....	4,945	158,236	42,827
Nov. 8, 1922.....	4,406	2,046	174,498
Same date in 1921.....	140,000	60,000	45,529

accumulations are not as heavy as they were two weeks ago. Dumpings during the week ended Nov. 30 amounted to 236,727 net tons as compared with 211,415 tons in the previous week. The Western and line trade is more attractive, but the slow return of cars does not permit a heavy movement in that direction and enough coal is therefore reaching Tidewater to amply fill all orders.

Lake business is nearly over. Dumpings during the week ended Dec. 4 were 541,175 net tons—521,456 tons cargo and 19,719 tons vessel fuel. This week's tonnage shows a large decline. The movement for the season to date is 18,978,132 tons as compared with 23,171,449 tons in the corresponding period of last year. There is plenty of soft coal at the Head-of-the-Lakes to supply adjacent markets and the all-rail shippers can be relied on to furnish the requirements of the lower end of the territory.

ANTHRACITE

Production of anthracite was 2,174,000 net tons during the week ended Nov. 25 as compared with 2,191,000 tons in the preceding week. Thanksgiving Day idleness is expected to reduce the output for the week ended Dec. 2 to approximately 1,800,000 tons.

Domestic users face a certain shortage, and buying of substitute fuels is increasing. Certain producers stopped shipping to the Lakes on Nov. 25 and the supply for Eastern centers is expected to increase soon. The Lake dumpings at Buffalo dropped to 98,230 net tons last week as compared with 151,450 tons in the preceding week. Steam coals are in better shape with the colder weather, although the output is still topheavy.

COKE

Production of beehive coke was 285,000 net tons during the week ended Nov. 25 as compared with 264,000 tons in the previous week. The Connellsville output was heavier than for any week since the first week in 1921. Prices are firm but there is no great market activity shown.

Foreign Market And Export News

British Output Recedes Slightly

Continental demand has fallen off in Wales, owing to the depreciation of European currency, especially the French franc. Prices are fairly well maintained, however, although slight variations occur owing to growing congestion at the ports. There is excess of the smaller and lower grade coals.

Production during the week ended Nov. 18 was 5,376,000 gross tons, according to a cable to *Coal Age*, as compared with the preceding week's output of 5,441,000 tons, the record for the year. Foreign buyers hope a price cut will follow the heavy production.

Despite the recession in Continental demand, South American markets are very active. This is due mostly to the absence of American competition. The weakness of small coals is attributed to slackness of the patent fuel industry, though bunkers are selling fairly well.

The North England market is affected to the same degree as in Wales. Orders, however, are still being booked for the United States, and the Argentine and the East are also in evidence. Collieries are in no need of fresh business as long as contractors call for full quantities.

French Collieries Still Active

Nord and Pas-de-Calais collieries remain active. Sized coals for domestic uses are still extremely scarce. Demand for industrial coals exceeds the present output.

Imports of British coal by France are increasing—999,000 tons in October as against 886,000 tons in September—but, owing to the present high rate of sterling and to the liveliness of the demand, French collieries are not yet feeling the pinch of this competition.

The situation of the Loire and Center fields is much improved, as is also the case in the southwest, whence a good export trade to Spain and Italy is being carried on. Owing to the fall of the mark, shipments from the Sarre to south Germany are now decreasing; but those for German railways remain important. Substantial supplies of Sarre coals also go to Switzerland and Austria. Production of the Sarre in September

was 985,000 tons, as compared with 1,019,000 tons in August. Pit headstocks on Sept. 30 were 467,000 tons, 75,000 tons less than on Aug. 31.

Germany delivered to France, during the first ten months of 1922, 3,680,000 tons of coke on reparation account, against an amount due of 3,923,000 tons. She under-delivered 66,000 tons of coke in August, 9,000 tons in September and 25,000 tons in October. France needs about 650,000 tons of coke per month, against which she can only reckon in the near future on a supply of 550,000 tons. In order to offset the monthly shortage of 100,000 tons, French ironmasters have purchased this month 20,000 tons of British coke and are trying to obtain, but rather unsuccessfully, an increased supply of Belgian coke.

FRENCH OUTPUT IN SEPTEMBER (IN METRIC TONS)

Districts:	Sept., 1922
Nord and Pas-de-Calais (Non-devastated mines)	616,006
(Devastated mines)	694,234
St. Etienne (Loire)	310,046
Lyons (Blanzy mine, etc.)	234,521
Center fields (Clermont-Ferrand) ..	109,281
Southern fields	
(Alais district)	155,287
(Toulouse district)	151,198
(Marseilles—lignite)	61,355
Western minor fields (Nantes)	4,693
Southwestern minor fields (Bordeaux)	5,493
Nancy (Rouchamp mine)	8,274
Lorraine field	369,332
Total	2,719,722

Coal Paragraphs from Foreign Lands

GERMANY—Another increase in the price of coal, this time amounting to 30 per cent, is announced. Unwashed fat coals are now 19,748 M. per ton.

SPAIN—The Central Hullera Asturiana having been dissolved, each mine owner is offering coal at the best prices he can obtain. This has made competition which is attracting buyers.

INDIA—The market is steady. Supplies are adequate. Quotations are: Bengal first, Rs.28; Bengal good second, Rs.26@Rs.27; English, Rs.38, and African, Rs.27½.

United States October Exports

Exports of coal and coke from the United States during October amounted

to 404,999 tons of hard coal, (306,082 tons last year); 1,729,425 tons of bituminous coal, (1,330,304 in 1921), and 38,613 tons of coke as compared with 22,256 tons last year. For the ten months ended Oct. 31, 1922, there were 1,543,221 tons of anthracite exported, as compared with 3,540,564 tons last year; 7,996,158 tons of bituminous coal, (18,803,929 in 1921), and 294,894 tons of coke, (220,507 tons last year).

Trade Dull at Hampton Roads

Continued car shortage, with resultant lack of supplies at the piers, featured the week's business here. Only 25 to 30 per cent of normal supply of cars was reported, and the trade was reflecting this situation in its dullness.

Demand and supply maintained the ratio of the week before, the continued lack of coal in large quantities having caused a lethargy among buyers. Coastwise and export business were weak, although bunkers moved with considerable briskness. Prices remained approximately the same. Two ships cleared for export last week.

Hampton Roads Pier Situation

	Week Ended Nov. 23	Nov. 30
N. & W. Piers, Lamberts Pt.:		
Cars on hand	484	444
Tons on hand	31,437	32,277
Tons dumped	70,038	54,336
Tonnage waiting	3,100	8,375
Virginian Ry. Piers, Sewalls Pt.:		
Cars on hand	954	1,014
Tons on hand	58,450	58,950
Tons dumped	79,967	122,895
Tonnage waiting	17,000	28,423
C. & O. Piers, Newport News:		
Cars on hand	382	452
Tons on hand	19,100	22,600
Tons dumped	38,759	34,133
Tonnage waiting	12,270	6,400

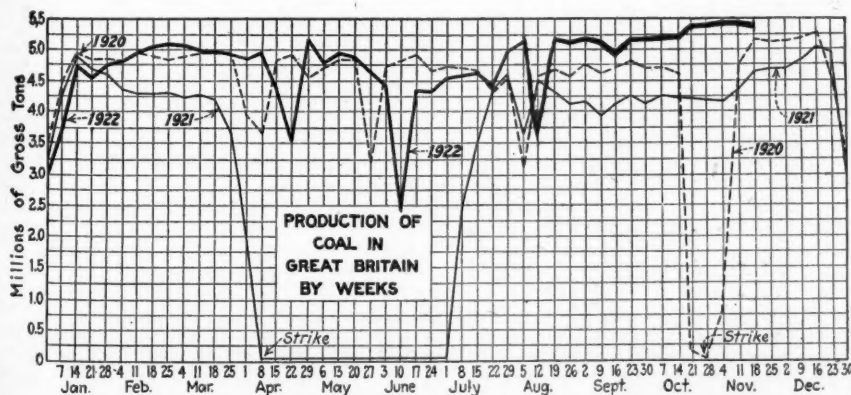
Pier and Bunker Prices, Gross Tons

PIERS	Nov. 25	Dec. 21
Pool 9, New York	\$7.50@7.75	\$7.50@7.75
Pool 10, New York	6.90@7.10	7.00@7.35
Pool 11, New York	6.00@6.25	6.25@6.50
Pool 9, Philadelphia	7.45@7.80	7.55@7.90
Pool 10, Philadelphia	7.00@7.15	7.00@7.25
Pool 11, Philadelphia	6.60@6.80	6.60@6.80
Pool 1, Hamp. Roads	7.75@8.00	7.75@8.00
Pool 5-6-7 Hamp. Rds.	7.50@7.75	7.50@7.75
Pool 2, Hamp. Rds.	7.75@8.00	7.75@8.00
BUNKERS		
Pool 9, New York	\$7.90@8.15	\$7.90@8.15
Pool 10, New York	7.30@7.50	7.40@7.80
Pool 11, New York	6.40@6.75	6.65@6.90
Pool 9, Philadelphia	7.75@8.05	7.90@8.20
Pool 10, Philadelphia	7.30@7.40	7.35@7.50
Pool 11, Philadelphia	6.85@7.10	6.85@7.10
Pool 1, Hamp. Rds.	7.75@8.00	7.75@8.00
Pool 2, Hamp. Rds.	7.75@8.00	7.75@8.00
Welsh, Gibraltar	38s. f.o.b.	38s. f.o.b.
Welsh, Rio de Janeiro	57s. 6d. f.o.b.	57s. 6d. f.o.b.
Welsh, Lisbon	50s. f.o.b.	50s. f.o.b.
Welsh, La Plata	50s. f.o.b.	50s. f.o.b.
Welsh, Genoa	42s. t.i.b.	42s. t.i.b.
Welsh, Algiers	38s. f.o.b.	38s. f.o.b.
Welsh, Pernambuco	65s. f.o.b.	65s. f.o.b.
Welsh, Bahia	65s. f.o.b.	65s. f.o.b.
Welsh, Madeira	40s. 6d. f.a.s.	40s. 6d. f.a.s.
Welsh, Tenerife	38s. 6d. f.a.s.	38s. 6d. f.a.s.
Welsh, Malta	41s. f.o.b.	41s. f.o.b.
Welsh, Las Palmas	38s. 6d. f.a.s.	38s. 6d. f.a.s.
Welsh, Naples	39s. 3d. f.o.b.	39s. 3d. f.o.b.
Welsh, Rosario	52s. 6d. f.o.b.	52s. 6d. f.o.b.
Welsh, Singapore	50s. t.i.b.	50s. t.i.b.
Welsh, Constantinople	50s. f.o.b.	50s. f.o.b.
Welsh, St. Michaels	50s. t.i.b.	50s. t.i.b.
Welsh, Port Said	49s. f.o.b.	49s. f.o.b.
Welsh, Oran	38s. f.o.b.	38s. f.o.b.
Welsh, Fayal	50s. t.i.b.	50s. t.i.b.
Welsh, Dakar	42s. 6d. f.o.b.	42s. 6d. f.o.b.
Welsh, St. Vincent	42s. f.a.s.	42s. f.a.s.
Welsh, Montevideo	50s. f.o.b.	50s. f.o.b.
Welsh, Alexandria	42s. f.o.b.	42s. f.o.b.

Current Quotations British Coal f.o.b.

Port, Gross Tons

Foreign Quotations by Cable to Coal Age	Nov. 25	Dec. 21
Cardiff:		
Admiralty, large	28s. @ 28s. 6d.	28s. @ 28s. 6d.
Steam, smalls	16s. @ 17s.	16s. @ 16s. 6d.
Newcastle:		
Best steams	25s. @ 25s. 3d.	25s. 6d. @ 25s.
Best gas	24s. @ 25s.	24s. @ 25s.
Best bunkers	23s. 6d. @ 24s.	22s. 6d. @ 23s. 6d.



North Atlantic

Signs of Growing Scarcity Cause Upward Price Tendency

Difficulty in Obtaining Good Coals Increases—Even Lower Grades Advance—Consumers Buy Closely—Market on Hair-Trigger Basis—Anthracite Shortage Moves Domestic Sizes.

Good coals are increasingly difficult to procure. This distinct evidence of the growing scarcity raised prices during the week and even the lower grades registered advances. Transportation conditions make delivery difficult and requests for tracers indicate how closely the consumer has been buying. Although purchasers profess to believe that the flurry is only temporary and will be relieved now that the Lake season has closed, the market is on a hair-trigger basis, as evidenced by the rising prices with the slightest increased demand.

The shortage of anthracite is moving more domestic sizes. Producers are finding this outlet very attractive and additional mines are now running to prepared coals. High-volatiles seem to have the edge on this business because of the brighter and cleaner appearance of the coal.

NEW YORK

Indications point to a more active market and better prices. Inquiries are more frequent. The low quotations prevailing here for domestic coals do not prevent foreign coals from being shipped here. Reports show that at least one cargo of about 6,000 tons was reported as arriving in the local harbor last week.

The insistence of the Fuel Administration that substitutes for anthracite be used wherever possible ought to add to the demand for bituminous coal, but on the other hand this may be offset by the warning of the Health Commissioner against the smoke nuisance.

Transportation difficulties continue to be the one sore spot in the situation. To this may be added crippled motive power as well as the neglect of some buyers to stock up while it is possible to get coal before the roads are hampered by snow storms. Many mines are receiving few cars and some of the smaller openings are not getting any.

Good coals are hard to pick up and now the cheaper grades are beginning to feel the effects of the shortage. There were nearly 1,500 cars at the local piers the latter part of the week, and all piers were reported working. Most of this accumulation was of pools 10 and 11.

Demand for coke was heavy, domestic screened product being quoted around \$10, f.o.b. place of loading. Gas

3-in. lump was quoted \$4.50@\$5; run of mine, \$4.25@\$4.75, and high-volatile steam \$3@\$3.50.

PHILADELPHIA

There is distinct evidence of a growing scarcity of soft coal, especially those fuels classified under Pools 1, 71, 9 and 10. In fact, Pool 1 is really not obtainable at all. This refers particularly to the coals coming from central Pennsylvania where the car supply is reported as particularly poor. The scarcity of the good coal is such that many houses have for the time ceased soliciting new business, being in some straits to make good on commitments already in hand.

There are many inquiries for domestic, and sales of single cars to retailers grow. The retailer is feeling his way and still shows a preference for the sized gas coals, although some ground is being made in the low-volatiles of a coarse and lumpy nature. There is also fair movement in the sized semi-bituminous grades.

Prices have moved upward. Greater activity in buying on the part of the consumer will immediately show much higher quotations. However, users declare that the present firmness is but a mere flurry, and argue that when Lake navigation is off the boards there will be plenty of coal and much lower prices.

CENTRAL PENNSYLVANIA

Two things have demoralized the coal business in this district. The car shortage, which practically closed down many mines, and now comes a shortage of water which is causing operations to close down.

Car shortage is reported worse along Pennsylvania. Miners are leaving for other sections and the situation is decidedly discouraging. Operations, generally, were closed on Thanksgiving. Prices have undergone but little change, the range being as follows: Unclassified, \$2.75@\$3; Pools 11 and 18, \$3.50; Pool 10, \$3.75@\$4; Pool 9, \$4@\$4.25; Pools 1 and 71, \$4.50@\$5.

BALTIMORE

Prices continue about on the same level as the run of several weeks past, with the possible exception that pools 71 and 9 are shaded off a bit from the prices demanded ten days or two weeks ago when there was an especially sharp call for the better-grade fuels and the prices took a distinct advance over the usual gap above pool 10 quotations.

At this writing there is still very little of real pool 71 offering and this rating is worth \$4.50@\$5. Pool 9 is now offering in a number of cases around \$4, although \$4.25 might be a nearer quotation. Pool 10 is quoted variously \$3.25@\$3.40 and pool 18 is \$2.50@\$2.75. Pool 34 is demanding \$3.

The gas-coal market is not of much interest at present although there are some quotations. Pool 64 is offered at \$3.25 and pool 63, \$3.75@\$4. While the car supply continues far below normal, and the demand at the same time is

fairly brisk from local consumers and from those who purchase from Baltimore agents or concerns having headquarters in this city, the market cannot be said to be a tight one by any means.

FAIRMONT

Prices were not materially affected by the cessation of Lake shipments during the closing days of November. Mines not shipping railroad fuel are not getting much of a car supply except on Monday of each week and there is much idleness among the mines in the northern part of the state. Much difficulty is being experienced in getting coal through to Western markets owing to the shortage of equipment.

UPPER POTOMAC

At the end of November production was on a larger scale than at any time in several years, there being a weekly output of over 100,000 tons in the territory embraced within the membership of the Upper Potomac Operators' Association. Production is especially large in the Upper Potomac region. In some parts of the Georges Creek region the output is limited but operators are managing to increase production notwithstanding the fact that so many miners have refused to return to work.

West

DENVER

Coal trade here remains at a low ebb because of the continued warm weather. Domestic demand is nearly stagnant but industrial call is a little better and slightly improved car supply is helping the producers to meet every phase of this demand. Production improvement is swifter in all of the surrounding Rocky Mountain States but this may be accounted for by the fact that Colorado was less affected by the strike than were the others.

KANSAS CITY

The price reduction of \$1 a ton on some grades of Kansas coal announced in Kansas City, Nov. 22, has failed to cause any noticeable increase in the demand. The weather continues mild. City folks are able to keep their homes comfortable with gas grates and ovens, and in spite of the assurance of dealers to the contrary, are holding off buying in the hope that there may be a further drop in price. Farmers in this section are stripping their farms of dead wood and lumber scraps.

The demand for industrial coal remains normal, with only occasional shortage in supply due to lack of cars. Operators estimate the mines of this district are producing 40 to 50 per cent of normal.

SALT LAKE CITY

The car situation has improved considerably and, as a result of resumed mild weather, losses will soon be entirely due to market conditions. Production is now around 50 per cent. The demand for small sizes is still decreasing. Dealers are buying for current use only, except in a few cases, in the belief that operators will soon reduce prices. Operators declare they contemplate no changes in this direction.

Anthracite

More Smaller Sizes Moving; Substitutes Sell Better

Upholding of Pennsylvania Tax Causes Two Companies to Raise Prices—Lake Dumpings Dwindle—Producers Promise Increase in Eastern Shipments—Cold Weather Halts Decline in Small Steam Sizes.

Cold weather has brought the consumer to an abrupt realization of the urgent need of substitute fuels. Purchases are being made unwillingly and sparingly, but more and more of the smaller sizes of hard coal are being moved and the sale of coke, briquets and domestic bituminous coal is improving. At this writing the high court decision upholding the Pennsylvania tax has resulted in two companies increasing prices of broken and egg coal, 15c. @ 20c., and the other domestic sizes 10c. Independent coals are moving at the higher figures recently authorized by the Pennsylvania fuel authorities.

Lake dumpings are declining—98,230 tons last week, as compared with 151,450 in the previous week—and producers now promise an early increase in Eastern shipments. Buckwheat is stronger and the cold weather also has checked the decline in the smaller steam sizes.

PHILADELPHIA

Increasing prices, both company and independent, have engaged the attention of the trade recently. First was the announcement of the State Fuel Commission, which had investigated claims of the independent producers for increased prices. As a result of this investigation prices for prepared sizes up to as high as \$12 were approved. Some independents selling at \$9.50 were allowed an increase of \$1 on prepared sizes, while some of them advanced pea to \$8. Following the decision upholding the Pennsylvania tax act, one of the companies advanced broken, stove, nut and pea 10c., and egg 20c., making the circular quotations as follows: broken, \$8; egg, stove and nut, \$8.30, and pea, \$6.30.

However, it is the almost utter lack of coal that is causing the retailer extreme anxiety. The independents still continue to be the heaviest shippers locally and as a result of new prices, retail advances to \$16 @ \$17 are to be expected.

The steam market is in fair condition, but all sizes are still to be had without difficulty. Buckwheat appears at times to strengthen, due to the colder weather, and also to the fact that the retail trade is taking a slightly larger share of this size. Inasmuch as the retail men often take this size to get the larger coals they are also in

turn insisting on their trade taking a proportion of it. Rice is the weakest of the trio, and barley still inclines to betterment. All steam sizes are still readily obtainable at last week's quotation on the market.

BALTIMORE

Hugh C. Hill, president of the Baltimore Coal Exchange, has tendered his resignation to Governor Ritchie, as a member of the Maryland Fuel Distribution Committee. In coal circles this is regarded as the first move to end the attempted control of the state committee, which after all has been able to accomplish little that would not have come about by the regular routine of trading.

The situation continues tense, although there is a slight betterment for the time being due to the fact that the weather has been mild for a week past. The great rush of householders demanding coal at once has let up to a slight extent. Dealers point to the fact that after nearly 1,500 cars were received in October, the November receipts dropped to almost 1,000 cars. So far, while promises have been made for a better movement for December, there is no indication that the month's receipts will run above those for November. The disinclination to use soft coal continues.

BOSTON

The local retail situation shows little change. Dealers are having a most uncomfortable time with certain of the fuel authorities who seem here to attempt more drastic regulation of deliveries than is suggested elsewhere.

The colder weather has caused considerable anxiety through this territory, but among the trade there is a distinct feeling that if we can tide over the next three or four weeks we shall then be rather better supplied than is possible at present. Certain of the producing companies stopped shipping to Buffalo for Lake shipment on Nov. 25 and already it is apparent that New England shipments will measurably increase during December.

BUFFALO

The Fuel Administration reports that it is about three weeks behind its emergency orders, and yet there is no great amount of uneasiness felt by those who understand the situation fully. They know that the reports of "not a pound of any sort of fuel" is the fault of the complainant. One of the largest local anthracite distributors states that he is burning coke entirely and finds it so satisfactory that he means to go on with it, even after anthracite in domestic sizes becomes plentiful again.

The sale of independent anthracite is brisk. Demand is so great that jobbers are in the region bidding against one another for it, even when the lowest mine price is \$12.

The Lake trade continues light and is about at an end. Loadings for last week were only 98,230 net tons, of which 50,800 cleared for Duluth and

Superior, 27,900 for Chicago, 8,000 for Milwaukee, 6,500 for Sheboygan, 2,500 for Racine, 2,000 for the Soo and 530 tons for Port Huron. Freight rates are strong at \$1.50 to Racine and Port Huron, \$1 to Soo, 75c. to Sheboygan, 60c. to Chicago, 50c. to Milwaukee.

NEW YORK

Consumers are realizing now more than ever that in order to keep their fires going they must use substitutes in conjunction with the domestic coals. This ultimatum was forcibly impressed by a few days of cold weather. Demand increased considerably and retail dealers found themselves swamped with orders. When it became apparent that substitutes would have to be taken or no deliveries would be made, dealers were enabled to move much of their buckwheat stocks, as well as bituminous coal, coke and briquets.

The affirming of the Pennsylvania tax law by the higher courts came in for considerable comment but no one in the absence of an official statement, professed to know if it would be passed on to the consumer by the producer. It was rumored that some of the larger independent producers who have been selling their domestic coals between \$9 and \$10 were considering the advisability of increasing slightly their prices for those sizes.

Buckwheat was stronger and there was more or less increased activity in rice and barley. Demand for these coals increased because of the colder weather. Considerable of the cheaper coals are yet available and quotations in some instances were lower than those given in the current price tabulation, which are for the better grades.

South

BIRMINGHAM

Several days of continued cool weather has further stimulated the domestic demand and will probably also create better inquiry for steam fuel if it holds on long enough. As it is, however, the steam trade is reported as being rather quiet, with spot business only being offered and that in small lots. Domestic demand has been good all along and the mines have not been able to supply trade requirements, due to car shortage and the dullness in the steam market, which has held down production in that direction. Indications are that householders will be compelled to use a considerable quantity of mine run during the winter.

The car supply for the past week has been very bad, reports indicating less than 50 per cent allotment of requirements stipulated by the mines. With few exceptions operations were maintained through the holiday, although output slumped at most of the mines.

VIRGINIA

Production has been increased, though hardly as large a volume is being shipped, the additional tonnage being utilized in the production of coke. On all lines serving this territory, however, car supply is somewhat shorter. With production averaging more proportionately than in other fields, there is nevertheless a demand sufficiently heavy to absorb the entire output.

Chicago and Midwest

Cold Breezes Stimulate But Few Signs of Life

Market Generally Remains Slow, Though Small Pick-Up Absorbs Part of Big Volume of Coal Available—Prices Do Not Vary Much.

The wave of windy, raw weather which swept this region from the Lakes into the South during the past week had only mild effect upon the coal market. It did stimulate buying a little but domestic consumers bought sparingly, still counting on a further drop in prices, and steam buyers were extremely cautious. It was to be noted in more than one market, though, that screenings were in steadily stronger demand, evidently because large consumers are not so sure they can get screenings in any volume they may need at any time they may call.

All company list prices on domestic lump and egg sizes from the best quality fields are said to have been maintained, Franklin County and 4th Vein Indiana lump still bringing \$5.50 in most cases, but in other fields quotations have been ragged. There is not sufficient demand for domestic sizes to absorb the lower grades even at their lower prices, which run down to \$3. In Kentucky the old battle between East and West goes merrily on, with the western fields winning business by selling domestic sizes at half the price of the other.

CHICAGO

There was mild interest in this market as the week closed. Production had been light during the week, due to Thanksgiving shutdowns and the week-end let-up. This sufficiently lessened the volume of coal available so that there was a little more buying than is usually the case at the end of a week, but nobody was scrambling for coal. Even screenings, the demand for which has been fair for three weeks, strengthened only slightly. Fourth-vein Indiana screenings were in some demand at \$2.15@2.40 and sold a little more readily, though in smaller volume, than did southern Illinois screenings of comparable quality quoted at \$2.25@2.50 but with a higher freight rate. A few steady small buyers continue to pay an occasional \$3 for best southern Illinois 2x1½-in. screenings.

Domestic trade channels continue full to the brim with coal that moves comparatively slowly. Indiana and southern Illinois carefully prepared lump still brings \$5@5.50 in most transactions, but there is real difficulty moving

domestic sizes from other fields near here and prices often take astonishing drops in order that car service costs may be avoided. There are a good many "no bills" of various sorts lined up throughout many fields. Stout efforts of producers to stimulate stocking get only moderate results. With car supply improving in several fields, notably eastern Kentucky, buyers still believe they will not be pinched for coal when cold weather sets in.

ST. LOUIS

There seems to be no desire on the part of the public to buy coal. People are still watching for a reduction in prices. The Laclede Coal Co. on the 30th announced a cut of 50c. per ton on everything for the first half of December. Their coals are not of standard grade and this has no effect on the other dealers.

The mild weather has played its part in choking off demand for coal in the city. Steam buyers too are slow and buy only from day to day. Somewhat similar conditions prevail throughout the country districts. Everyone expects lower prices. Colder weather is the only hope. Very little anthracite, coke and smokeless is moving in.

INDIANAPOLIS

Cooler weather has stimulated the retail business slightly, but there is not the activity there should be or that the retailers really expected this time of the year. The domestic consumer continues to buy his supplies in one- and two-ton lots and there are few basements in Indiana that are filled. Prices show a little increase both to industrial and domestic consumers. The domestic increase is approximately 25c. a ton on most of the prepared sizes. Foreign-mined coal continues to retail around \$12.50 and \$13.

Operators say there is a slightly more active demand for steam coal. Screenings have advanced about 50c. a ton but the strength on the larger sizes does not seem to be as much. A prominent retailer of Indianapolis is authority for the statement that there is a greater percentage of Indiana prepared coal being sold now than at any time for years.

LOUISVILLE

While it had been expected that eastern Kentucky would be forced to drop prices on prepared sizes, the weather man sent snow and cold weather during the week, with the result that any tendency toward lower prices was checked for the time being. It is admitted, however, that \$6 to \$7 a ton for eastern Kentucky prepared sizes, when mine-run is selling at \$3.10@3.75 a ton, and screenings at \$3@3.50 a ton, represents an abnormally high market, with a spread between domestic and utility coal that is unreasonable.

During the past few days the retailers have been kept quite busy handling orders of one to three tons, and with very small yard stocks on hand have been ordering coal about as fast

as they have loaded it out of their yards. Western Kentucky coal has been moving into this market some St. Louis and Southern business. As a whole the field is doing fairly well considering lack of general demand. Lump coal is quoted at \$3.50@4, the average being about \$3.75; mine-run, \$2@2.50; screenings, \$1.25@1.75.

WESTERN KENTUCKY

As a result of cold weather and snow as far west and south as the western Kentucky coal fields, retailers' demands for prepared coal as well as steam-plant fuel have picked up, and this has aided in checking the downward tendency of the market. Domestic sizes have been much better, due to the fact that they are being quoted at about half the price of eastern Kentucky sizes, and lower than domestic-size quotations in many other competing fields. Operators feel that they will get a fair demand for prepared during the next several months, and feel that the tendency of industrial buyers to buy lightly and often will result in a fair volume of steam business.

A better volume of business is reported from Indiana, with fair movement in Kentucky and Tennessee. Some retailers who heretofore have handled West Virginia, east Tennessee and southeastern Kentucky coals almost exclusively are now handling a considerable tonnage of western Kentucky coal because its price is \$3 lower and it has a freight rate advantage of 50 or 60c. to Louisville. Western Kentucky domestic sizes are selling at \$3.50@4 at mine, while eastern Kentucky is \$6@7. Retailers are asking a gross margin of around \$2.50 a ton on all domestic fuel. Western Kentucky is asking \$2@2.50 at the mine for mine-run, and \$1.25@1.50 for screenings.

SOUTHERN ILLINOIS

Mild weather, public indifference and a few of the independents cutting the prices have kept things barely going. There is no demand for domestic sizes in the Cartersville field. Nut is extremely slow. The only change has been a little pick up in the demand for screenings, but this has not altered the prices much. A few of the independents are still selling nut at about \$4, egg and lump at \$4.50 and up, while the association operators in the Cartersville field are holding it to \$5.50 on domestic sizes.

Mines are working only two or three days a week, some because of no orders, some because of no cars. Everybody is looking for colder weather. Railroad tonnage is light. Like conditions prevail in the Jackson County and Duquoin field except that the demand there is slower for everything and the car supply is not good on the Illinois Central. In the Mt. Olive field everything is hard to move but a little domestic is going north and west. Steam is slow, although the last few days in the week there was an improvement. No change in prices is recorded.

In the Standard field there are "no bills" on hand at nearly all mines, all the time, on practically all sizes. Car supply totals about three days a week but the mines do not seem able to work over that even if cars were plentiful. Prices vary from \$1.25 on screenings to \$1.50. Railroad tonnage in both Mt. Olive and Standard fields is light, except on the Mobile & Ohio.

Eastern Inland

Market Feels Depression With Release of Lake Coal

All but Domestic Prices Slump—Cars Still Short and Deliveries Slow—Cool Weather Quickens Domestic Demand—Removal of Prices Restrictions Enlivens Movement in Ohio.

The release of 1,000,000 tons of Lake Coal per week has had a depressing effect on the Eastern Inland market. Prices have slumped on all coals with the exception of domestic. Receipts are not greatly increased, however, and there is now just a tendency of prices to hold firm. Cars are still short and deliveries slow.

Domestic coal is in active demand with the colder weather. The removal of the Ohio price restrictions is causing a better movement of tonnage within the state. There is no shortage, but retailers are busily replenishing their stocks at prices which remain firm.

CLEVELAND

The market for most grades, save domestic lump, continues to show signs of weakness. Demand eased off in rather pronounced degree last week due to the Thanksgiving holiday and the unseasonably warm weather. Buying in the spot market is dull, and consumers seem to be content to confine purchases to immediate needs.

The virtual closing of the Lakes has made it necessary for shippers to divert tonnages formerly absorbed by the Northwest into local markets. That fact has increased the available supply and is one strong reason of the present lull. Many consumers have been waiting for just this development. With prices showing no indication of stiffness, industrial users have had no incentive to make forward commitments.

Both screenings and No. 8 slack are down about 25c. Screenings are quoted at \$2.80@3.15. Slack is selling \$3@3.40. Stocks are not heavy and many industrial consumers have not more than two weeks' supply.

The total Lake movement for the season will exceed 18,000,000 tons. This is about 3,000,000 tons greater than was expected to be moved in September.

COLUMBUS

With the closing of the Lake trade cars were more plentiful for a time, permitting increased production, but this situation is now changing and there is a growing scarcity of cars.

Prepared sizes are still holding up. Dealers are buying more with lower temperatures prevailing. Retail stocks are only fair and some are rather low. Retail prices continue firm at former levels. The disbandment of the Ohio Fuel Administration Dec. 1 is not ex-

pected to change retail prices materially, at least for the time being.

Steam business is more quiet. Steam plants have sufficient reserves for the present and are buying mostly for current needs.

Ohio domestic users have to depend largely upon Ohio grades as well as those from the closer fields of West Virginia and Kentucky for their supplies as practically no Pocahontas or other smokeless is coming into the market. Anthracite is also scarce and little is to be had at present.

BUFFALO

The trade keeps up only fairly well. Either the shippers have sized the consumption and demand up badly or the conditions are still quite abnormal. It was confidently claimed for some time after the strike ended that the consumers were not buying as much as they were using and that they would soon run short. Then it was held that the car shortage was increasing so fast that it would soon be impossible to move coal enough.

Both of these claims are now to a certain extent given up, for the large consumers say that more coal is offered them than they need and the car supply in other lines, especially grain and flour, is better than it was. At the same time some of the shippers, including a few railroad officials, are still saying that the winter will show bad car shortages. It is noted that the railroads are not buying much more coal than they need.

Prices have a downward tendency, but quotations remain at \$5@5.25 for Youghiogheny gas lump; \$3.75@4.25 for Pittsburgh and No. 8 steam lump; \$3.25@3.50 for all mine run and \$3@3.25 for slack, with Altoona smithing at \$6.75.

EASTERN OHIO

Because of inadequate transportation, production during the week ended Nov. 25 receded somewhat as compared with the preceding week. Output was 338,000 tons, a decrease of 9,000 tons under the previous week and about 54 per cent of potential capacity. It would not be accurate to charge the loss in production of some 200,000 tons solely to transportation disability as Lake shipping programs are now concluded, and a larger quantity of coal is seeking disposition in local markets.

Even with restricted operations the demand is not commensurate with the output. Consumers are not uneasy over the possibilities of a shortage; in fact, some of the more conservative buyers who have laid in some stocks at higher prices than those now prevailing wish to use up a portion of this higher-priced fuel before laying in further supplies.

Fuel control was suspended in Ohio effective Dec. 1, and no adverse results are evident so far as the coal consumer is concerned, except in some sections retail dealers have advanced their delivered prices 50c. because the allowance to them under state control

was not sufficient to cover cost of handling. Steam prices have fallen during the week and prices on lump sizes f.o.b. mines have remained at the same level.

Cleveland industries and retail yards, during the week ended Nov. 25 received 2,343 cars of bituminous coal; 1,717 of which were for industries and 626 cars for retailers. This was the third largest week during the past two years.

Based on the quantity of coal now on hand at the lower docks and in transit, it is quite likely that at the present rate of Lake transportation, some 300,000 tons will be left over.

DETROIT

Bituminous coal is a little more plentiful than in recent weeks. The larger proportion of the supply reaching Detroit is still coming from mines in Ohio. Smokeless is deficient in supply and not always readily obtainable.

There is apparently little active interest in the market on the part of local buyers of steam coal. Retail dealers also, are displaying scant interest in supply. The market conveys the impression of waiting by the buyers in the expectation that some development will occur which will make it possible for them to stock up at lower prices.

Three-quarter lump from the Pittsburgh No. 8 district is quoted \$4.50; mine run, \$3.50; slack, \$3. Hocking lump is \$5.50; egg, \$5; mine run, \$3.50; nut, pea and slack, \$2.75. Fairmont 3-in. lump is \$4.50; mine run, \$3.50; slack, \$2.75@3. Four-inch lump from West Virginia or Kentucky is \$6, as also is egg, with mine run, \$3.75 and slack, \$3.50. Smokeless lump and egg holds around \$8 with run of mine \$6, and slack not quoted.

PITTSBURGH

The local market has become quieter still. Consumers appear to be very well supplied by regular contracts and only occasionally enter the spot market. Apparently the ending of the Lake shipping season has relieved consumers, exclusive of the domestic trade, from all concern as to supplies.

The market has developed wide price differences according to description and quality of coal. Regular Pittsburgh steam coal is quotable moderately steady at \$2.75, while Connellsville steam is \$2.25@2.50. Both byproduct and gas, of the grades commonly passing in odd lots in the open market, are quotable \$3@3.25, but choice grades for particular buyers bring up to \$3.50@3.75, all for mine run. Screenings are at a premium on account of car scarcity. In sharp contrast with the steam coal market, domestic 1 1/2-in. lump is in very heavy demand, with unsatisfied inquiry practically every day, the current market being \$4.75@5.

Coal production in the Pittsburgh district is in the neighborhood of 40 per cent of rated capacity, depending still entirely on car supply, which is expected to increase somewhat.

NORTHERN PANHANDLE

With the closing of the Lakes it is easier to make shipments to Inland West markets, the W. & L. E. and other roads having removed certain embargoes. The bulk of the product, however, is going for railroad fuel.

Northwest

Scramble for Hard Coal

Continues Hopelessly On

Thus Far Much Less Than Promised Amount Has Arrived—Rail Shipments Only May Boost Cost—Soft Coal Plentiful at Level Prices.

There seems no relief for the Northwest's hard-coal shortage to be expected from Lake shipping. Promises of all sorts have been made but the coal has not been forthcoming. Prices have been for two or three weeks on the point of flight but business decency and various influences of restraint have operated to prevent it. However, there is no telling where quotations will go when the navigation season closes Dec. 15 and all-rail hard coal begins coming in.

The Northwest is full of bituminous coal. Nobody is worrying for a minute about that. Industrial demand is fair and domestic trade has been sufficiently stiffened by the wind and comparative cold of the past week to keep yards reasonably busy. Docks with a good deal of various bituminous coals on hand have begun cutting prices to meet rail competition. This has not started any orgy of buying for even the reduced dock prices do not undersell the Illinois and Indiana coal reaching the lower part of this region. It has been many a year since the markets of the Northwest were so badly off balance as they are now.

DULUTH

Contrary to expectations shipments to the Head-of-the-Lakes showed an increase this week, but even a pick up will do little to alleviate the anthracite shortage. In all, 47 cargoes arrived at Duluth-Superior harbor, six of which were hard coal. Sixteen ships made port in one day. There are reported 22 cargoes en route, five being hard coal.

The cut in bituminous has not made any appreciable difference in the market of \$9.50 for lump, \$8.75 for run of pile and \$7 for screenings which has prevailed for some time. It is a known fact that as soon as navigation closes the docks which have dropped 25c. will come back to list. The dock trade in southern Minnesota has been cut off by the fuel administrator and the demand from the Mesaba Iron Range is lighter than was anticipated.

Comparative figures show the condition of the markets here. Last year the docks were clear when navigation opened. In all 10,000,000 tons of bituminous were brought up. This year there remained 3,500,000 tons on the docks when navigation opened and

about 5,000,000 tons will be brought here before navigation closes.

In anthracite the situation is different. It is estimated that only about 500,000 tons will arrive here this year, which must be added to the 400,000 tons on docks when navigation opened. Last year 1,841,000 tons were brought here. The average for the last five years is 1,700,000 tons of anthracite. This means a considerable shortage. These are government figures.

MILWAUKEE

The coal market is unusually quiet, due to fine weather. However, dealers report a steady demand locally and dock companies are shipping out coal a little more satisfactorily. There seems to be an entire absence of concern both in the city and country as to the adequateness of the winter supply. Prices continue on the old basis, with the exception that one company is receiving 50c. per ton more for anthracite than the trade generally. A modification of the present schedule of hard and soft coal prices will probably be made on Jan. 1.

In November, 15 cargoes of hard coal, aggregating 128,139 tons, reached

port, making the season's receipts of hard coal to date 270,253 tons, as against 958,677 tons during the same period last year. Soft coal receipts for November number 40 cargoes, aggregating 321,765 tons, making the season's receipts of soft coal 2,267,665 tons. Last year the soft coal receipts to date aggregated 2,557,383 tons.

MINNEAPOLIS

The soft coal market is supplied sufficiently from all sides so as to keep it pretty well upset. The dock prices have had to be cut to meet rail competition. Rail shippers claim to have held their prices for the better grades. The best southern Illinois coal is held at \$5.50 with reductions from that figure, at the mine, for some of the different grades. The freight to the "twin cities" is \$3.55 making the price on track, \$9.05—a figure which is considerably below the dock list prices.

There is no indication of much support to the market from any direction, aside from what may follow cold weather. Industrial requirements are confined to small tonnages. Buyers are fighting hard for lower prices, and will not lay in stock beyond current needs.

It has been impossible to get anywhere near the anthracite allotment of 750,000 tons, being 60 per cent of 1,250,000 tons which is assumed as a normal store. Up to the end of November, somewhere around 300,000 tons of hard coal had been received at the upper docks.

New England

Expected Improvement

Fails to Materialize

Actual Buying Falls Far Below Tonnage Looked For—No Heavy Buying Likely Till Well Into New Year—Movement to Tide Ample for Spot and Contract Needs.

Improvement in the market predicted a fortnight ago has not materialized. The amount of buying then in prospect sloped off considerably, and it took much less tonnage to meet requirements than was then expected. From present indications there will be hardly any comprehensive buying until 1923 is in full swing.

Pocahontas and New River coals are again reaching Hampton Roads in volume. While accumulations are not what they were sixty days ago there is ample coal on wheels for bottoms arriving. The Western and line trade have been more attractive as to price, especially in the case of prepared sizes West, but cars are not being returned by the Western roads in sufficient number to permit heavy tonnages in that direction. Enough coal therefore is being forced to

Tidewater to take care of any possible spot demand in addition to the usual contract movement.

Current quotations both at the Virginia terminals and at re-handling points here reflect lighter inquiry, sales having been made at 50c.@75c. less than during the latter part of November. Today \$7.25 is an average quotation for cargo coal at Hampton Roads, while \$8.50@8.75 is the range on cars Boston to Providence for inland delivery.

Other than scattered purchases by the industries practically the only buying is on the part of certain of the railroads. There is still a small tonnage being received from England for locomotive purposes, and there is also a fair tonnage of high-volatile being purchased for the same requirements all-rail from Pennsylvania. Prices on both are at a minimum, and we have heard no sale at more than \$3.50 per net ton f.o.b. mines or in the case of English coal at more than \$8 c.i.f.

Quality grades in central Pennsylvania are being held at steady prices. Output is not large, but most operators are able in spite of car shortage to make prompt shipment and also keep themselves two to three weeks ahead on orders.

At the New York and Philadelphia piers there is no improvement. Coal there is still a drug on the market, and few operators are hardy enough to take the chance of absorbing heavy demurrage charges.

Cincinnati Gateway

Smokeless and Domestic Feature Inland Trading Market on Domestic Sizes Holds Firm— Price Cuts Continue on Fine Coals— Smokeless Trade Still on High Plane —Open Weather Prevails.

Smokeless and domestic business occupy the center of the stage so far as Inland trading is concerned. So far the market on domestic sizes has held firm in the face of the various drops that have been recorded since the closing of the Lakes, but with its ever-increasing volume of slack in its wake there has to be a giving away point somewhere and the cuts in price continue on the residue.

Smokeless business continues on the high plane it has occupied for months. More and more shipments, however, are falling into the hands of brokers, with the result that there is a full swing of business on the low-volatile lump and egg sizes around \$7.50@\$8 even while straight-out selling agencies are taking the same business at \$5.13 a ton providing that the purchaser will wait his turn. The weather still remains open—a fatal condition for this time of year from the coal man's viewpoint.

CINCINNATI

The absence of any active buying from the steel mills and the byproduct plants has been the last of one of the agents upon which this market has rested. For weeks these industries have been a strong prop to the trade and without them gas and byproduct coals have fallen to a level where they are worth little more than the steam grades. The drop in price on nut and slack too has been given deep consideration and it would surprise no one to see an attempt to boost the domestic offerings in order to make up the mining costs. Trading from Michigan points has been slackened because of the clean-up of the coals that were standing as a surplus at the Lake ports.

Down the river came a consignment of 42,000 tons for the local harbors and Louisville. This, however, made no appreciable impression on the local prices, which are below those set by the former state fuel administration. December opened with the following retail quotations: Pocahontas lump, \$10.50@11; mine run, \$9.75; splint lump, \$10; nut and slack, \$7.50.

LOW-VOLATILE FIELDS

NEW RIVER AND THE GULF

New River mines are still limited to about one day's operation per week. Several times recently the price at Tidewater has softened considerably simply because of the fact that oper-

ators have been called upon to ship more coal to Tide than was necessary, the C. & O. not being in a position to handle the Western movement. There have been slight "no market" losses because of this.

Conditions in the Gulf region are not unlike those in the New River district. The fact that there is a better Western demand than there is in the East is not helping producers. Despite the fact that the market is quiet, the output hardly suffices to fill standing orders.

POCAHONTAS AND TUG RIVER

A considerable tonnage which has been going to the Lakes from the Pocahontas region is now available. The Western movement, however, is still somewhat short of the demand owing to limited rail facilities. There are more cars available for Eastern shipments than to the West and it is that condition which still prevents producers from doing the maximum amount of business in Western markets.

The Tug River mines are affected to the same extent as Pocahontas operations by difficulty in securing anything like an adequate supply of open-tops. Of course, some of the fuel is flowing to Tidewater but the demand is nearer par in the West and prices are better there.

HIGH-VOLATILE FIELDS

KANAWHA

Inland West markets have softened under the diverted Lake tonnage. The field is not finding it possible to ship much coal to the West on a spot basis, for the mines as a rule are not working more than one full day per week. Not more than one-fifth of the capacity tonnage of the field was being produced late in November except on the line of the Kanawha & Michigan. In the East prices are on a lower level and consequently no effort is being made to find a market in that section.

LOGAN AND THACKER

Although Logan mines are obtaining a somewhat better car supply, nevertheless the supply dropped once again after the C. & O. had made an effort to furnish more cars. Production is limited to about 33 per cent of capacity. Even with the Lake markets shut off, there is a sufficient demand to absorb more fuel than is now being produced in the region. Only a small tonnage is being sold on a spot basis, at prices ranging \$3.25@\$4 for mine run.

Although the closing of the Lake season has eliminated one of the outlets for tonnage originating in the Kenova-Thacker field, nevertheless with production curtailed no trouble has been experienced in finding a market elsewhere, though prices are hardly on so high a level. Much of the coal is still being moved under contract, so that there is little surplus for spot shipment.

NORTHEASTERN KENTUCKY

Though the field has felt the effect of the closing of the Lakes, nevertheless owing to limited production, prices have not been depressed as much as in other fields where there is a better car

supply. Production hardly suffices to more than fill orders for regular customers. Much coal is still moving to Ohio points. There has been little or no recession as to lump prices, with mine run ranging \$3.75@\$4, gas mine run bringing even a higher price.

Coke

CONNELLSVILLE

Coke production continues to increase and is now at considerably above the immediate pre-strike level. The increases seem to be due chiefly to improving car supply.

There appears still to be practically an even balance between production and consumption of coke, whereby market prices show little tendency to change. The great bulk of the merchant production of furnace coke is going out on contract, partly contracts at set prices and partly contracts involving weekly or monthly price adjustments. Spot and prompt coke continue at \$7.25@\$7.50 but are perhaps not entirely as firm at this range as a week ago. For regular shipment over December the lowest asking price on standard quality seems to be \$8, and this price has been quoted for first quarter on particularly good coke. Spot or prompt foundry coke continues quotable at \$7.50@\$8.

The *Courier* reports production during the week ended Nov. 25 at 128,350 tons by the furnace ovens and 72,750 tons by the merchant ovens, a total of 201,000 tons, an increase of 18,720 tons. Production was the heaviest since the beginning of 1921, and one-third greater than production at any time for thirteen months before the strike.

UNIONTOWN

Further softening of the coal market with the coke market holding its own marked the trend for last week. The price of steam coal is hovering perilously close to \$2 and while that price has not figured in any actual sales several for small tonnages have been closed at \$2.10, mines. The market, however, for steam coal generally is quoted at \$2.25@\$2.50.

There has been little improvement in the car situation. Efforts of the Fayette-Greene Coal Producers' Association to improve the car situation on the B. & O. have brought temporary relief at least, the supply last week being greater than for many weeks.

Practically all coke being sold now is for prompt delivery but prices continue to withstand a limited demand. So far as is known there have been no contracts closed for first-half delivery. There were no contracts in force for the last half of this year because of the strike situation.

BUFFALO

Demand is good locally on account of the failure of home coke plants to produce as much as is needed. Jobbers in the general market report prices slack and lower at \$7.50 for foundry, \$6.25 for furnace, \$6 for stock and \$9.50@\$10 for chestnut, in domestic trade.

News Items From Field and Trade

ALABAMA

A coal tippie and storage yard with a capacity of 2,000 tons is being constructed at Lock 12, Birmingham, under the supervision of government engineers from the office at Tuscaloosa. The yard is being provided for the purpose of keeping a good stock of fuel on hand and preventing a possible shortage at any time.

Lieutenant E. P. Eldridge, who has been the representative of Fuel Distributor Spens in the Birmingham district for several weeks, closed his office Dec. 1. J. B. Ford, representative of the Interstate Commerce Commission in the distribution of equipment, also discontinued this work Dec. 1.

COLORADO

A "Closed Shop" campaign in Colorado is planned by the United Mine Workers of America according to a report received at the office of the state industrial commission from various mining camps. Many locals have gone on record favoring a law which will ultimately result in the exclusion of all non-union workers from Colorado coal mines. The proposed law may provide for a rigid examination of all miner applicants by boards composed of active coal miners. As in Illinois, the plan would be to have none but union miners on these examining boards. Several years ago a similar bill failed to pass the Colorado general assembly.

Nine members of the state ranger force have resigned, according to Col. Patrick J. Hamrock, adjutant general and superintendent of the Rangers. It is reported that former state Representative Alphonse Ardourel, a former coal miner, now interested in coal properties, a captain overseas during the war, is slated to succeed Col. Hamrock.

Every miner employed by the Juanita Coal & Coke Co. at Bowie has gone on strike, according to an official notification received by the state industrial commission from the company's office at Pueblo. No reason for the strike was indicated in the telegram but it is reported that the men went out to force recognition of the union. An investigation has been started by members of the commission. The men, it is said, have violated the state industrial act by failing to give notice of the contemplated walkout. The strikers are liable to criminal prosecution.

ILLINOIS

A party of coal operators and engineers from the Pennsylvania fields is touring southern Illinois inspecting the various safety methods and appliances used in the district and may try to introduce similar methods of combatting fire and gas in Pennsylvania. The party is from Spangler, the scene of the recent disastrous mine explosion and includes the following: H. H. Hasler, chief engineer of the Pennsylvania Coal & Coke Co., of Cresson, Pa.; S. W. Blakeslee, division superintendent at Ehrenfeld, Pa.; J. George Nicholson, general superintendent of the Watkins Coal Co., Bainsboro, Pa., and William Patterson, safety inspector at Cresson. The party inspected the mine rescue stations at Duquoin, Benton and Zeigler and visited mines at West Frankfort, Marion, Herrin and other large mining centers.

The activities of the Central Illinois Coal Traffic Bureau have been materially lessened and the offices moved from a suite in the Old Colony Bldg., Chicago, to a room in the same building adjoining the offices of the Nason Coal Co. W. A. Holley, former manager, but now in Nason employ, keeps a finger on the Bureau's affairs, which are directed by George Hemphill. The Bureau may some day be revived.

E. L. Carr, formerly general freight agent of the Chicago & Alton, has been appointed sales manager of the Sangamon County Mining Co.

The office of the Illinois Coal Operators' Association was moved last week from Springfield, where it has been for ten years, to the Fisher Bldg., Chicago, in order that it may be closer to the headquarters of the majority of the association's member companies. Secretary C. E. McLaughlin is

moving to Chicago and will continue to serve the association.

M. E. Peitler, vice-president in charge of operations for the Peabody Coal Co., Chicago, was pleasantly reminded on Nov. 23, that the day was the forty-eighth anniversary of his birth. His staff decorated his office before his arrival that morning and a cake bearing 48 candles was cut amid much pomp and circumstance.

Percy Kuhlman, who recently became vice-president in charge of sales for the Keystone Coal & Mining Co., Chicago, was married on Nov. 25, to Miss Margaret Bales at the bride's home in LaGrange. Mr. Kuhlman was connected with the Sterling Midland Coal Co. at Chicago until two months ago.

The Lumber and Coal Credit Association, 12 North Clark St., Chicago, has been incorporated with capital of \$10,000 for general collection and reporting business by P. J. Whiteside, M. B. Whiteside and C. D. Peck.

INDIANA

The Atomized Products Co., Evansville, producer of pulverized coal, paint products and colors, has filed a voluntary petition in bankruptcy, listing liabilities of \$96,000 and assets of \$26,000. The company was formed two years ago. It erected a pulverizing plant at Evansville, but has been short of capital to develop its plans.

The Superior Fourth Vein Coal Co. has incorporated for \$50,000 and has commenced developing a new mine located near Linton on the C. M. & St. P. This mine is owned by C. A. Murphy and others.

A petition asking that a receiver be appointed for the Cathleen Coal Co. of Greene County, to operate the mine on the property of the company and for \$200 damages has been filed in superior court at Terre Haute, by Arthur D. Torr. The petition states the company is in debt to the extent of \$10,000. It is alleged the property is in good condition and will pay dividends if handled properly. For this reason it was asked that a receiver be named who could proceed with the operation of the mine and in this manner settle all indebtedness.

Deeds have been filed in Terre Haute, transferring approximately 1,205 acres of land in Vigo County to the Indiana Electric Corporation for the purpose of operating a coal mine on and under the land purchased. The total consideration is given as \$62,109. The corporation plans to operate coal mines to supply fuel for the electric plant to be erected on the Wabash River.

Beginning December 1, consumers of coal in Terre Haute, Ind., and other cities in the Wabash valley coal fields are favored by a 10-per cent reduction in Indiana short-haul coal rates for distances of 30 miles and less. If the rates had not been contested, the cheapest rate on coal from the surrounding mines into Terre Haute and other cities would have been 89c. a ton. Instead of the new minimum of 50c. a ton. Approximately 1,000,000 tons of coal are consumed by domestic users and industrials in Terre Haute annually. The new rate affects a saving of more than \$300,000 a year.

William P. Boatman has been named receiver for the Cathleen Coal Co. in Greene County. The petition for a receiver was filed by Arthur D. Torr so the mine could continue operation. It is stated that the company has sufficient equipment to operate successfully and that with careful supervision all of the indebtedness could be cleared.

IOWA

E. J. Nolan, state weight and measure inspector, recently found a coal dealer in Sioux City whose scales had been giving an extra 200 lbs. for every 1,000 lb. sold.

KANSAS

Twelve miners were reported injured, two seriously, in a powder explosion Nov. 25, in Hamilton Mine No. 6, near Cherokee. About 100 men normally are employed in the mine.

Plans for a Kansas state mine rescue meet at Girard, Dec. 16, were completed the other day by James Sherwood, state mine inspector, Mayor J. J. Story, of Girard, and members of the Girard Chamber of Commerce. H. N. Taylor, president of the Southwestern Interstate Coal Operators' Association, and John L. Lewis, international president of the U. M. W., or their representatives, will speak.

Ballots were prepared for a special election of officers for District 14, U. M. W. A., scheduled for Dec. 12. The officers will assume their duties Jan. 1, and will serve until March 31, 1925. With the assumption of office by the newly elected men, the autonomy of District 14, lost in the Howat régime, will be restored.

KENTUCKY

The Madisonville Coal Properties Co., Hopkins, has been organized, with capital of \$100,000; J. B. Ramsey, B. C. Mitchell and R. H. Gatton, all of Madisonville are the incorporators.

Western Kentucky operators who sent a committee to Washington to confer with Fuel Director Spens, on Nov. 9, relative to maximum prices, after an appointment had been made, and found on arrival that Spens was in New York, he having wired to break the engagement after the committee had left for Washington, are a bit peeved over the matter, and have stated that if Spens wishes to discuss the problem he can meet them at Dawson Springs, as they are not wasting further railroad fare in unnecessary travel. Right now with the maximum price around \$4 in western Kentucky, there is no immediate need of regulation.

It is announced at Whitesburg, that another good-sized coal development is to be launched in the Beaver Creek field, by the Huntington Coal Mining Co. of Huntington, W. Va. J. M. Hall will be at the head. Contracts have been made for much of the building work, including 100 miners' houses, a modern tippie, with conveyor, to cost about \$100,000, a clubhouse, Y. M. C. A., church, school and other buildings. The name of the new town will be Harkins.

Michigan capital is reported to be behind a movement for development of a hydro-electric plant at Parkersmill, four miles from Somerset, to furnish power for a big flour mill and for coal and timber operations. It is reported that \$5,000,000 has been raised to finance the plan.

MISSOURI

Articles of incorporation have been filed with the recorder of Bates County for the Missouri-Kansas Coal & Fuel Co. of Worland, located on the west line of the county. The directors are, J. H. Smith of Worland, and A. A. Grammel and Geo. Grammel, formerly of Pleasanton, Kan. The capital is \$50,000.

Dan C. Crane, of Springfield, has secured a lease on 280 acres of coal land near Creighton and has opened a mine. He has been working on the mine about a year getting it into shape. At present about 150 men are employed. The mine is equipped with electrical machinery and is modern in every way. Several mining companies are being formed to work in the neighborhood.

Four coal mines are being opened in the vicinity of Elmo. C. Tuttle and E. E. Carver, who opened the DeLand mines at Quitman, are developing the Elmo field.

The Big Creek Coal Co., of Kirksville, has announced that it will close and seal Mine No. 3, and it probably will remain closed for a year. About 100 men are affected by the shutdown.

NEW MEXICO

The list of dead caused by the recent explosion in mine No. 4 of the Albuquerque-Cerrillos Coal Co. at Madrid, remains at seven but the number of injured was reduced from about 30 to 13. Only twenty men were in the mine at the time of the explosion and all were killed or injured, officials of the company said. Cause of the explosion has not been determined.

NEW YORK

Merle D. Thompson, of Elmira, a wholesale dry goods dealer, has been appointed fuel administrator for the Sixth Judicial District, covering ten counties in the south central part of the State. Mr. Thompson succeeds Samuel J. Koerbel, who resigned Nov. 23. The appointment was made by State Fuel Administrator Woodin.

The Coal and Coke Committee, Trunk Line Territory, announces a public hearing 11 a.m., Dec. 14, at 143 Liberty St., New York City, on adjustment of rates on bituminous coal from central Pennsylvania and adjacent points and on anthracite to Boston & Maine points in Canada, including Derby Line, Vt. The proposal is intended to remove in part fourth section violations and to provide for proper alignment with rates effective to contiguous territory.

The General Electric Co. announces the formation of the **Charles A. Coffin Foundation**, consisting of a fund of \$400,000, the income from which will be used to encourage and reward service in the electrical field by giving prizes to employees, recognition to lighting, power and railway companies for improvement in service to the public and fellowships to graduate students and funds for research work at technical schools and colleges. The foundation was created as an appreciation of the great work of Mr. Coffin, not only for the General Electric Co. but also for the entire electrical industry. Mr. Coffin, retired from active leadership of the company May 16 last, in his 78th year, having been identified with the development of the electrical industry since 1882.

Geo. Macnoe, manager of the Boston office of **W. B. Connor, Inc.**, has been recalled to New York to take charge of the contractors sales department, handling heating and pumping equipment.

A. E. Jones, sales engineer in the New York office of the Terry Steam Turbine Co., has accepted a position with **W. B. Connor, Inc.**, New York City, in a similar capacity.

The Merrimac Anthracite Coal Corporation, with mines in Montgomery County, Virginia, has opened an office in Buffalo and begun the sale of buckwheat size in quantity. The president, William Griffiths, of Scranton, Pa., is temporarily at the Buffalo office, but the management of the branch will be given to one of the other officers. The freight rate from the mines to Buffalo is \$3.83, as against \$3.28 from the Pennsylvania anthracite mines.

OHIO

The **Murbach Coal & Supply Co.**, Elyria, has been chartered with a capital of \$75,000 to deal in coal. Incorporators are John Murbach, Ralph Murbach, R. W. Rammone, J. E. Murbach and H. W. Ingersoll.

The **Trio Sales Co.**, Cincinnati, has been chartered with a capital of \$10,000 to do a general wholesale business. Incorporators are G. M. Shoemaker, W. B. Davies, W. R. Davis, Arthur J. D. Busedicer and Addison G. Durham.

The **Valley Camp Coal Co.**, of Cleveland, which had a temporary office in Columbus during the Lake season, has closed this office and its manager, T. N. Bradford, has gone to Cleveland.

The **New York Coal Co.**, Columbus, has been awarded the contract for 3,600 tons of Hocking nut, pea and slack for the municipal light plant at \$2.75 at the mines, making \$4.01 delivered in Columbus. At the same time the **F. M. Spencer Coal Co.**, was awarded the contract for 1,800 tons for the water works department at \$2.65 f.o.b. mines.

Headway is being made by the **Lorain Coal & Dock Co.** in the opening of its new mine in Belmont County. The mine will be known as the Lincoln No. 5 and is not far from the old Lansing mine of the company, operations at which ceased several months ago and which has since been dismantled. The company is planning for the erection of a modern tipples early in the spring.

The **Creemar Coal Co.** has been chartered with a capital of \$100,000 to mine coal in the Crooksville district. Incorporators are: S. H. Garrick, C. W. Howell, E. F. O'Neal, H. C. Pugh and Hazel A. Shraake.

Bob Abbihl, who was with the **Reliance Coal Co.**, of Cincinnati for a couple of years and who returned to the coal traffic department of the Chesapeake & Ohio Ry., was in Cincinnati recently.

President James Reilly, a coal man, of the Cincinnati Chamber of Commerce, has seen that the fuel interests are largely represented at the meeting of the **Rivers and Harbors Congress** in Washington on Dec. 7. He appointed Captain Oscar Barrett, Captain John T. Hatfield, R. P. Gillham and Fred Hertweg.

Benjamin N. Ford, vice-president of the **Matthew Addy Co.**, of Cincinnati, was seriously injured on Nov. 26 in an automobile collision. Mr. Ford had but recently recovered from a serious operation.

Rush Meadows, the Cincinnati financial genius of the **Big Mandy Coal Co.** and the **Mohio Coal Co.**, both of which are in the

hands of the receiver, while being arranged for trial on a charge of violating the Ohio blue sky law, was arrested on a warrant issued in Jackson, Ky., on a charge of being a fugitive from justice. He was taken there for trial.

OKLAHOMA

In an explosion of undetermined origin in the mine of the **McAlester-Edwards Coal Co.** near Pittsburg, one shotfirer was killed. The force of 210 miners had just left the shaft. It is believed that the explosion was due to a windy shot.

The **Tulsa County Coal Co.**, of Tulsa, has just been organized and charter filed in the office of the Secretary of State. This company owns considerable land in Tulsa County. The company is capitalized at \$50,000 and the incorporators are Benjamin C. Connor, Harry A. Tallman and Eugene E. Hennig, all of Tulsa.

The **Oak Ridge Coal Co.** has been organized at Red Oak and will develop a vein of coal on land owned by this company near Red Oak. The company is capitalized at \$200,000 and the incorporators are: Vince Davis, James Hilling and Ray Morgan, all of Red Oak.

Strikers in six mines of the **Crowe Coal Co.** at Henryetta, who went back to work Nov. 14, pending arbitration, are still working, although the district joint board failed to agree on the case in a two-day session in Kansas City, Nov. 22 and 23. The dispute has been referred to W. L. A. Johnson, commissioner for the Southwestern Interstate Coal Operators' Association, and John White, former international president of the U. M. W. Eight hundred men struck Oct. 23, because of a disagreement over the distance a machine crew should be required to move a coal cutting machine without extra pay.

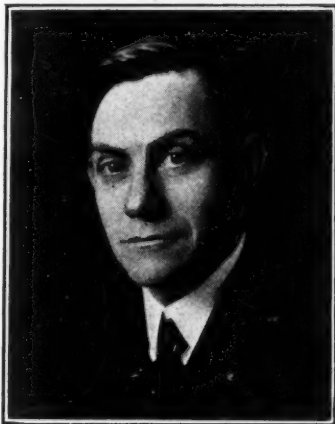
PENNSYLVANIA

The **Bowman Coal Co.**, of Trenton, N. J., announces the opening of an office in the Real Estate Trust Bldg., Philadelphia. Arch'd W. Garvin will be in charge.

Announcement has been made that **P. D. Browning**, formerly mining engineer of the Berwind-White Coal Mining Co., has been promoted to the office of general superintendent, a new office created by the concern.

Since the opening of the mines in the Monongahela River valley, more than 65,000 tons of coal are being shipped daily on the Monongahela River by the **Carnegie Steel Co.**, the **Vesta Coal Co.**, **Hillman Transportation Co.**, and the **Equitable Towing & Transportation Co.**

Meritt Hutton, graduate of the Colorado School of Mines, formerly chief engineer and, until recently, general superintendent, for the Rembrandt Peale interests, an-



MERRITT HUTTON
Mining Engineer, Johnstown

nounces that he has opened an office as consulting mining engineer in Johnstown. He is prepared to make surveys, plans and estimates and give complete engineering service.

The **Pine Hill Collieries Co.** has notified the State Department, Harrisburg, of its intention to increase its indebtedness from nothing to \$1,750,000. W. E. Torrey, Philadelphia, vice-president, filed the notice.

The **Pennsylvania Steam Coal Co.** has been organized with capital of \$400,000 by Thomas F. Manns, Pittsburg; Frederick U. Fresh, Wilkesburg; Chas. L. Brinton, Indiana, Pa.

The following companies have recently been granted charters at Harrisburg: **South Union Coal Co.**, Greensburg, capital, \$1,000,000; treasurer, Jay C. Jamison, Greensburg. Purpose: Mining coal and manufacturing coke and its byproducts. Incorporators: John M. Jamison, Jay C. Jamison and Robert W. Smith, Greensburg. **L. & W. Coal Co.**, McKeesport, capital, \$5,000; treasurer, Herman Levine, McKeesport. Purpose: Mining and producing coal. Incorporators, Thomas Williams, Dravosburg; Herman Levine and Louis Levine, McKeesport. **Moon Run Gas Coal Co.**, Pittsburgh, capital, \$50,000; treasurer, Stanley J. Kann, Pittsburgh. Purpose: Mining, producing, buying and selling coal. Incorporators, D. L. Feick, Brentwood; Stanley J. Kann and Louis Caplan, Pittsburgh. **Beiso Coal Co.**, Pittsburgh, capital, \$50,000; treasurer, F. S. Snyder, Sewickley. Purpose: Mining, producing, buying and selling coal and coke. Incorporators, T. E. Horrell, Oakdale; M. H. Griest, Crafton, and Arch Robertson, Rennerdale.

Opinions in the following cases were rendered by the Pennsylvania Workmen's Compensation Board on Nov. 28: **Mrs. George Sucs, et al.**, against the **Carnegie Coal Co.**, Pittsburgh, appeal by the defendant from an award of referee; referee affirmed and the appeal dismissed. **Albert Mamatey** against the **Pittsburgh Terminal Railroad & Coal Co.**, appeal by defendant from award by referee; referee sustained and appeal dismissed. **Ivan Lyach** against the **Diamond Coal & Coke Co.**, Pittsburgh, appeal by defendant from award of referee; hearing de novo granted for Pittsburgh. **Mrs. John Barovszki** against the **Labelle Coke Co.**, Labelle; appeal by defendant from award by referee; referee affirmed and appeal dismissed.

Drought conditions are so serious that tank trains have been put on to haul water to collieries in the Schuylkill region. The operators say they will not close down the mines if there is any water within fifty miles. They hope to obtain enough water for steam purposes by hauling it until the rains set in.

UTAH

The coal strike which began in April cost the state \$71,635.85. These figures were given out by the commander of the National Guard.

A fire at the **Carbon Coal Co.'s** mine at Rains which caused a number of men to lay off for a few days has been extinguished without much loss. No one knows the origin of the fire which burned furiously until attacked by a force of expert mine fire fighters.

The coal operators of Utah, indicted last month for profiteering, were released without bond after their attorneys had waged a bitter and successful fight against bond requirements.

WASHINGTON

The appointment of **Richard Prescott, Jr.**, of Rosslyn, as deputy state coal mine inspector in the Rosslyn-Cle Elum district has been announced by Edward Clifford, director of the Department of Labor and Industries. Mr. Prescott has been engaged in mining thirty-one years, the last twenty-five years in Washington.

WEST VIRGINIA

The purchase of 384 acres of smokeless coal and a mining plant, at Byrer, near Tygarts Junction, Barbour County, by the **Howard Smokeless Coal Co.**, from the Byrer Coal Co. is announced. The deal is one of the largest negotiated in central and northern West Virginia in recent months.

The banks of Morgantown, having declined to remain open during the evenings on pay day, it is intimated that some of the coal companies operating on Scott's Run and elsewhere in Monongalia County will establish a bank of their own for the purpose of enabling miners to have their checks cashed without undue loss of time. **James H. Stewart**, resident manager of the **Cleveland-Morgantown Coal Co.**, indicated that it will be necessary for several companies to pay their miners in cash until a coal bank can be established near the Scott's Run section in order to avoid a repetition of the strike a few weeks ago of some of the miners at the Cleveland-Morgantown Coal Co. as a protest against having to lose time in getting their paychecks cashed.

The **W. F. Toney Coal Co.** has been organized by Williamson people for the purpose of operating in the Williamson field. The company has a capital stock of \$25,000. General offices will be at Williamson. Ident-

tified with the new concern are: J. S. Henry W. F. Toney, Frank Crum, Nellie Henry and Alice Toney, all of Williamson.

Members of local union No. 4775, U. M. W., having disregarded the orders of the international, district and sub-district organizations to return to work, the **charter of the local union has been revoked.** The members of local No. 4775, about 400 in all, engaged in an unlawful strike when the company by which they are employed on Scott's Run refused to discharge a teamster who was not covered by the union agreement. Sub-district officers directed the men to return to work. The strikers refused. It has not heretofore been necessary to revoke a union charter in the northern West Virginia field so that the action in this particular case constitutes a precedent.

The use of gasoline motors in West Virginia mines was discussed at the November meeting of the Clarksburg Mining Institute, held late in the month. It seemed to be the consensus of opinion among the mining men present that the use of gasoline and compressed air motors was dangerous and should be supplanted where possible by electric motors. O. J. Murphy, Edwin Williams, Joseph Green and E. L. Griffith, district mine inspector and well as others participated in the discussion.

Floyd E. Cunningham has been appointed as general manager of the Bottom Creek Coal & Coke Co. property recently acquired by the Pocahontas Fuel Co., at Vivian.

Visitors in the Fairmont market recently were **P. T. Latta**, general manager, and **W. B. Agee**, auditor of the Marion Gas Coal Co., with headquarters at Greensburg.

John T. Fallon, who has been the superintendent of the West Virginia Coal & Coke Co., at Bower, has been named as superintendent of the Coalton plant, it has been announced by General Manager J. W. Bischoff.

Joseph Hoylman, superintendent of the Coalton plant of the West Virginia Coal & Coke Co., has been transferred to Bower where he becomes superintendent.

The fate of C. Frank Keeney, president of District 17, U. M. W., against whom a murder accessory charge is pending as an outgrowth of the attempted armed invasion of Logan County last year, will be decided in Greenbrier County, under a second change of venue, granted by Judge J. M. Woods, to which the Logan County cases were transferred under the first change of venue. Greenbrier County is virtually free from industrial disputes and is conveniently accessible to counties from which the defendant and most of the witnesses will come.

WISCONSIN

There is a supply of 12,000,000 tons of soft coal on hand in Wisconsin, with 2,-

000,000 more expected by the close of navigation, sufficient to meet all demands. The **anthracite situation is serious**, with only 500,000 tons on hand and not more than 14,000 tons expected weekly until navigation closes. Milwaukee is short 750,000 tons of hard coal.

WASHINGTON, D. C.

J. D. Northrop has been authorized to act in charge of the land classification branch of the U. S. Geological Survey in the absence of **Herman Stabler**. Mr. Northrop will retain his duties as chief of the division of mineral classification. The name of the land classification board recently has been changed to that of land classification branch.

A substantial beginning of the active development of that vast mineral wealth which has heretofore been locked up in the public domain of various western states, but which is now to be liberated under the terms of the general leasing law, has been made, according to Dr. H. Foster Bain, Director of the Bureau of Mines, in his annual report just submitted to the Secretary of the Interior. Coal is now being mined under lease in Washington, Montana, North Dakota, South Dakota, Wyoming, Utah, Colorado, New Mexico and Nevada. Coal and other mines on Indian lands are being supervised in still other states. On the public lands proper the Bureau of Mines is now charged with supervision of 29 coal leases, 200 coal-prospecting permits and 5 coal licenses. The value of waste coal in dumps at Wilkeson, Wash., was demonstrated, with the result that a plant for the recovery of 150,000 tons is now being erected. The difficulty in the way of using low-priced cyanide in metallurgical work was discovered and remedied, resulting in and breaking of a monopoly in this important chemical material.

Work in connection with the leasing of mineral lands has developed so much more rapidly under the federal leasing Act, than had been expected, that the Bureau of Mines is being embarrassed seriously in its efforts to meet the situation. It has been necessary to take men temporarily away from their other duties to help the leasing force and to postpone all but the most urgent work. It is very apparent that it is imperative to have more money for this activity to prevent delays in the carrying forward of mining operations and in the protection of the public's interest.

ALASKA

Awards for coal have been announced by the Alaska Coal Railroad Commission for coal produced in Alaska, as follows: **Moose Creek Coal Co.**, 5,000 tons at \$6; **Healy River Coal Co.**, 10,000 tons at \$2.40; **Evans Jones Coal Co.**, 32,000 tons at \$5.80; **Henry Baxter**, 15,000 tons at \$6.50.

for a period of 10 consecutive days, provided that the cars so assigned shall be counted against the distributive shares allotted to the mines in said district. All regulations with respect to car service are suspended so far as they conflict with the directions hereby made.

A complaint has been filed with the Interstate Commerce Commission by the **Wyoming Coal Co.**, of Tams, W. Va., against the Virginian Ry. The complaint alleges rates on coal from complainant's mines located on the Virginian to certain interstate destinations are unjust, unreasonable, unduly prejudicial and discriminatory in so far as they compare with rates applying from mines of complainant's competitors located on the Chesapeake & Ohio in the New River district. The establishment of joint through rates is asked.

The proposed report in the case of **Edward E. Marshall vs. the Pennsylvania R.R. Co.** by Examiner Warren H. Wagner, of the I. C. C., finds rates on coke in carloads from Elkhorn, W. Va., to Harrisburg, Pa., unreasonable. Reparation is awarded.

The proposed report in the case of the **Nelson Fuel Co. vs. the Chesapeake & Ohio Ry. Co.** by Examiner J. B. Keeler finds rates on coal in carloads from mines on the Greenbrier & Eastern R.R. to interstate destinations unreasonable and unduly prejudicial. A schedule of maximum reasonable and non-prejudicial rates is prescribed.

The Interstate Commerce Commission has been asked to investigate the **freight rate charges on coal from the anthracite fields to Newport News and to Norfolk.** The rate to Newport News is \$4.50 and to Norfolk \$3.40. The dealers in the former city assert that this is discriminatory and mitigates against their business. Traffic interests at Norfolk have offered their assistance in lowering the rate to the sister city.

The Evan Jones mine in the Matanuska field caught fire on the second level on Nov. 18. Bureau of Mines men were dispatched to the mine immediately. Telegraphic advices are to the effect that the fire has been barricaded and the area flooded. Since this mine is an important source of supply of the coal needed by the government railroad, it is of the greatest importance to secure its quick return to production.

CANADA

A significant announcement was made by **Hon. D. D. McKenzie**, Solicitor-General for Canada, in the course of an address in Toronto a few days ago, to the effect that plans were under way to supply Ontario and Quebec with **coke manufactured from Nova Scotia bituminous coal** in sufficient quantities to make these two provinces absolutely independent of hard coal supplies from the United States.

The Yellowhead Coal Co.'s mine, at Coal Spur, Alberta, caught fire recently from spontaneous combustion, and all efforts up to now to extinguish the fire have been futile. It is feared that the mine may be a total loss.

The Carbondale Coal Co., operating near the British Columbia-Alberta boundary, has commenced production. A carload of coal shipped to Cranbrook, B. C., was retailed at \$4 per ton, a remarkably low figure for recent years. The company has sunk a 100-ft. shaft and driven a tunnel on one of the seams. The two main seams have not yet been developed. The coal is described as a semi-anthracite, and makes a satisfactory house coal.

In a statement just issued the Federal Fuel Advisory Committee, at Ottawa, once more warns householders that there is **little anthracite coming into Canada** and that it is important to lay in a supply of substitutes. Consumers are facing a situation which may lead to difficulty and possible hardship "unless the attitude of the public toward substitutes greatly alters." It will be the middle of February before the shortage of anthracite can possibly be caught up with, it is said, by which time winter transportation difficulties are generally at their worst.

The Betty mine, near Telkwa, B. C., has commenced to ship coal to Prince Rupert. Last year the mine shipped a considerable quantity of coal to both Prince Rupert and Edmonton. The coal is high grade, being in particular demand for blacksmithing. Unfortunately, the mine is 7½ miles from the railway at Telkwa, and the roads are exceedingly bad. It is possible, however, to ship over the winter snow. The seam is 18 ft. thick, with two shale partings, 10 and 20 in. thick. Owing to the nature of the country, a railway to connect the mine with the Canadian national system, it is said, would be costly.

On the recommendation of the Federal Fuel Distributor the I. C. C. on Nov. 29 issued an order, effective Dec. 1, directing the C. & O. Ry. to assign to the mine of the Rhodell Coal Co. at Rhodell, W. Va., open-top cars at the rate of four per day for ten consecutive working days for movement to points in Virginia, in priority to any other use of such cars. It is provided, however, that the cars so assigned shall be counted against the share allotted to the mine and shall not be subject to diversion or reassignment except with the approval of the commission. All regulations of the C. & O. with respect to car service in so far as they conflict with this order are suspended.

The assignment of cars for railroad fuel loading has reached such proportions as to be denounced by operators in eastern Ohio as bordering on intimidation, their argument being that there is no car shortage as far as the mines having railroad fuel contracts are concerned. As a result of the failure to furnish commercial mines in eastern Ohio with an adequate car supply, it is estimated that fully 10,000 miners in Belmont County are idle the greater part of the time. Operators and officials of the union have united in denouncing the assigned car system as vicious and pernicious.

Coming Meetings

Coal Mining Institute of America will meet Dec. 13, 14 and 15 at Pittsburgh, Pa. Secretary, H. D. Mason, Jr., 911 Chamber of Commerce Bldg., Pittsburgh, Pa.

National Exposition of Power and Mechanical Engineering will be held at the Grand Central Palace, New York City, Dec. 7-13. Manager, Charles F. Roth, Grand Central Palace, New York City.

Obituary

Gilmer S. Adams, retired banker, partner and cousin of the late J. B. Speed, founder of the J. B. Speed Co., Byrne & Speed Coal Co. and Louisville Cement Co., and developer of a number of mines in Kentucky, died recently in London, Eng. Mr. Adams visited South America and went to London, planning to visit Paris. He was 68 years old. Death was due from an infection in a small wound.

Alexander Dargavel, president of the Centerville Block Coal Co., Centerville, Iowa, died suddenly in his office of apoplexy. Throughout his career he had been associated with W. W. Oliver. The two men were born in Scotland and went to Centerville in 1872 and continuously operated coal mines.

J. F. Davis, of Shawnee, Ohio, who has been deputy mine inspector in the New Straitsville district, died recently following a short illness.

Traffic News

The Nashville, Chattanooga & St. Louis R. R. has ordered additional locomotives, cars and equipment, to cost \$2,297,037.

Because of an emergency the I. C. C. issued an order Dec. 2, directed the Missouri Pacific R.R., effective Dec. 4, 1922, to assign open-top cars for the loading and transportation of anthracite coal to mines in the so-called Spadra District on the line of that road at the rate of 40 cars per day